INSUCON

INSUCON CABLES AND CONDUCTORS PRIVATE LIMITED

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INTRODUCTION

Founded in 1995 in the vibrant capital of Rajasthan, Jaipur, **INSUCON** Cables and Conductors Private Limited has established itself as a trusted leader in the manufacturing of LT XLPE Power and Control Cables. With three decades of industry experience, **INSUCON** has consistently prioritized customer satisfaction and product quality, setting the foundation for its long-standing success.

From the outset, **INSUCON's** commitment to excellence has been unwavering. The company is ISO 9001:2015, ISO 14001:2015 and ISO 45001:2015 certified, reflecting its adherence to international standards in quality management, environmental responsibility, and occupational health and safety. Furthermore, **INSUCON** boasts an in-house NABL testing laboratory, ensuring that every product meets stringent quality checks and performance standards.

INSUCON's dedication to improving its infrastructure and technological capabilities allows it to meet the evolving demands of its customers. By adopting cutting-edge manufacturing techniques and utilizing high-quality raw materials, **INSUCON** delivers reliable and durable cables that meet both national and international standards.

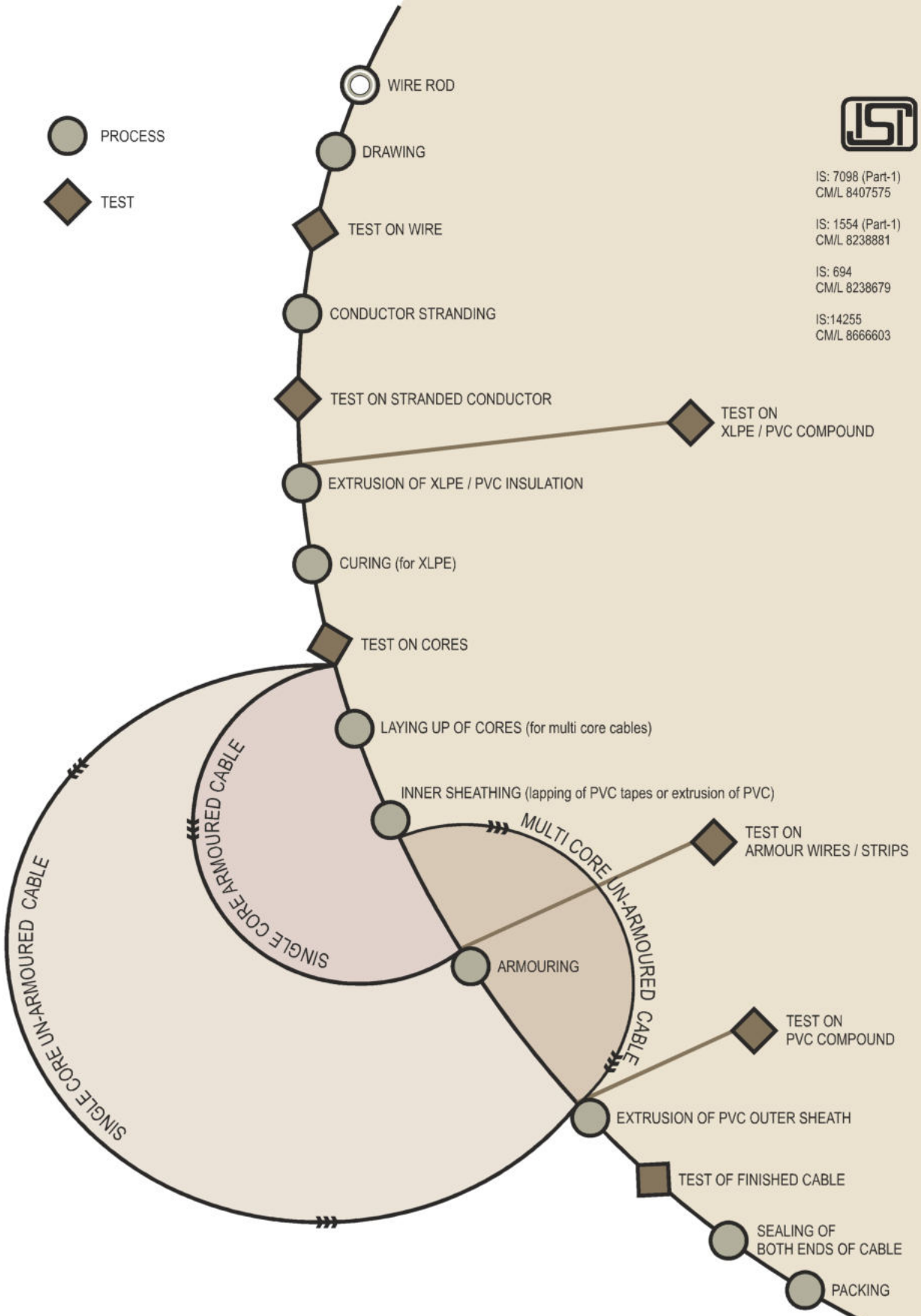
At the heart of **INSUCON's** operations is a team of dedicated and highly experienced professionals. Their expertise and commitment to quality assurance play a crucial role in the company's ability to deliver products that exceed customer expectations. This skilled workforce is the backbone of **INSUCON**, enabling the company to tackle challenges head-on and innovate in a competitive market.

INSUCON's range of LT XLPE Power and Control Cables, LT PVC Power and Control Cable, Instrumentation Cable, Flexible Cable, Aerial Bunched Cable, Fire Survival Cable etc. is designed to meet diverse applications across various sectors, including power distribution, infrastructure, and industrial applications. These cables are engineered for optimal performance, offering excellent electrical insulation properties, resistance to environmental factors, and enhanced safety features. This makes **INSUCON** a preferred choice for customers seeking reliability and efficiency in their electrical solutions.

As **INSUCON** Cables and Conductors Private Limited continues to grow, the company remains steadfast in its mission: to deliver quality products while ensuring customer satisfaction. With a solid foundation built on trust, innovation, and expertise, **INSUCON** is poised to lead the cable manufacturing industry well into the future. Whether you are an individual consumer or a large corporation, **INSUCON** is committed to providing you with the best in power and control cables, tailored to your specific needs.

FLOW CHART

for Manufacturing Process
& Quality Control Checks For Cables



IS: 7098 (Part-1)
CM/L 8407575

IS: 1554 (Part-1)
CM/L 8238881

IS: 694
CM/L 8238679

IS:14255
CM/L 8666603

Our manufacturing plant, spread across **60,000 square feet**, is equipped with cutting-edge technology and the latest advancements in cable production. We specialize in the design and manufacturing of **LT Power and Control Cables, Instrumentation Cables, Fire Survival Cables, Flexible Cables, Aerial Bunched Cables** catering to a wide range of industrial and commercial applications.

Key Features:

- **Spacious Production Area (60,000 Sq.ft.):** Our facility is designed to optimize workflow and maximize productivity. It includes dedicated zones for raw material handling, cable extrusion, testing, packaging, and logistics.
- **Modern Plant & Machinery:** We employ **world-class machinery** and **automated processes** to ensure high precision, consistency, and efficiency in cable manufacturing. This includes **continuous extruders**, **cable coilers**, **twisting machines**, and more.
- **Fully Equipped Laboratory:** Our in-house laboratory is equipped with the latest testing instruments and systems to conduct a full range of quality checks on raw materials, in-process materials, and finished products.
- **NABL Accreditation:** Our laboratory is **NABL-accredited**, ensuring compliance with national and international quality standards. We carry out comprehensive testing as per various & relevant IS standards.

ISO 9001:2015

CERTIFIED ISO 14001 : 2015 COMPANY

ISO 45001:2018

राष्ट्रीय परीक्षण और अंशशोधन प्रयोगशाला प्रत्यायन बोर्ड NATIONAL ACCREDITATION BOARD FOR TESTING & CALIBRATION LABORATORIES INDIA भारत

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LT PVC / XLPE Power Cables

Product Range

1100 Volts Grade, Armoured / Unarmoured Single Core / Multi Core Cables

Single Core Cables upto 1000 Sq.mm
Multicore Cables upto 630 Sq.mm

Technical Parameters

Voltage Grade	:	1100 Volts
Relevant Standards	:	IS:7098/Part-1/1988, IS:1554/Part-1/1988, IEC-60502 and BS:5467
Number of Cores	:	Single Core to Four Core
Cross Sectional Area	:	Single Core Cables - 1.5 Sq.mm to 1000 Sq.mm as per Spec. / IS Multicore Cables – 1.5 Sq.mm to 630 Sq.mm as per Spec. / IS
Type of Conductor	:	Copper / Aluminium
Type of Insulation	:	XLPE / HR PVC / PVC
Inner Sheath	:	Extruded PVC / FR / FRLSH/ ZERO HALOGEN (LSZH) (ST-1) or (ST-2)
Type of Armouring		
Multicore Cables		
Material	:	Galvanised Steel
Type	:	Round Wire / Flat Strip
Single Core Cables		
Material	:	Nonmagnetic Aluminium
Type	:	Round Wire / Flat Strip
Outer Sheath	:	Extruded PVC / FR / FRLSH/ ZERO HALOGEN (LSZH) (ST-1) or (ST-2)
Drum Lengths	:	500 / 1000 Mtrs.
Tolerance	:	+/- 5%

Cable Code

The following codes are used for designation of cables:

A -Aluminium Conductor

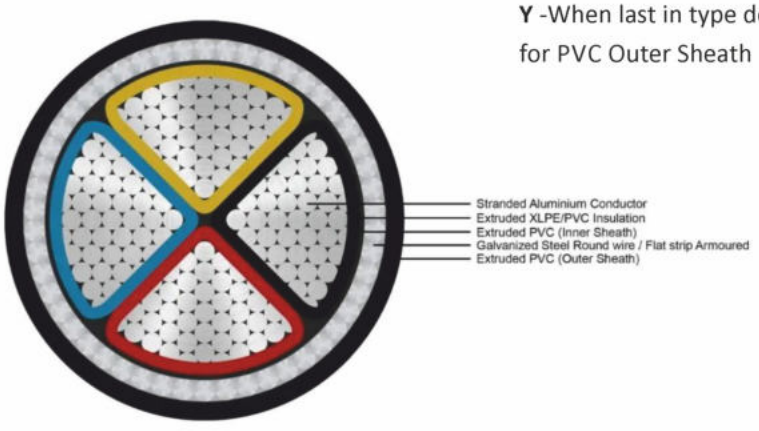
If type designation doesn't contain **'A'** in the beginning then the cable is with Copper Conductor

2X -At first or second place in type designation, it stands for XLPE insulation

Y -At first or second place in type designation, it stands for PVC insulation

W -Steel Round Wire Armour **F** -Steel Strip Armour

Y -When last in type designation, it stands for PVC Outer Sheath



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LT PVC / XLPE CONTROL CABLES

Product Range

1100 Volts Grade, 61 Cores Armoured / Unarmoured 1.5 / 2.5 Sq.mm

Technical Parameters

Voltage Grade	:	1100 Volts
Relevant Standards	:	IS:7098/Part-1/1988, IS:1554/Part-1/1988, IEC-60502 and BS:5467
Number of Cores	:	2 Core to 61 Core
Cross Sectional Area	:	1.5 Sq.mm to 2.5 Sq.mm as per Spec. / IS Solid / Stranded
Type of Conductor	:	Copper (Bare / Tinned)
Type of Insulation	:	XLPE / HR PVC / PVC / LSZH
Inner Sheath	:	Extruded PVC / FR / FRLSH/ ZERO HALOGEN (LSZH) (ST-1) or (ST-2)

Type of Armouring

Material	:	Galvanised Steel
Type	:	Round Wire / Flat Strip
Outer Sheath	:	Extruded PVC / FR / FRLSH/ ZERO HALOGEN (LSZH) (ST-1) or (ST-2)
Drum Lengths	:	500 / 1000 Mtrs.
Tolerance	:	+/- 5%

Cable Code

As per IS:7098/Part-I & IS:1554/Part-I

The following codes are used for designation of cables:

A -Aluminium Conductor

If type designation doesn't contain **'A'** in the beginning then the cable is with Copper Conductor

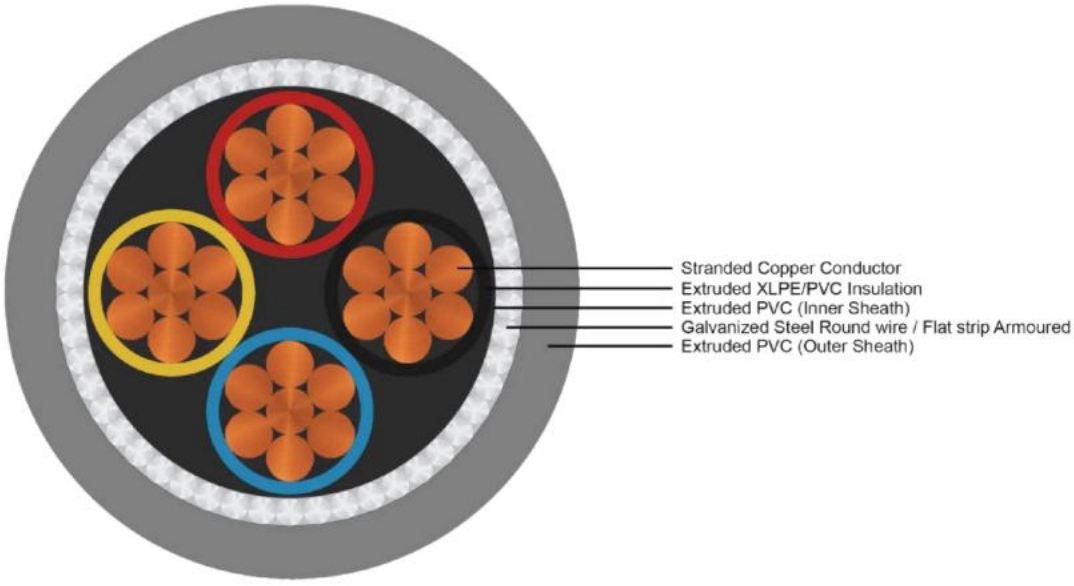
2X -At first or second place in type designation, it stands for XLPE insulation

Y -At first or second place in type designation, it stands for PVC insulation

W -Steel Round Wire Armour

F -Steel Strip Armour

Y -When last in type designation, it stands for PVC Outer Sheath



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Instrumentation & Flexible Cables

INSTRUMENTATION CABLES

Bare / Tinned Copper, PVC, Heat Resistant, LSZH PVC, XLPE insulated Cores, Paired, Triad etc. with Aluminium Myler Tape for Individual and overall / overall shielding upto 50 Pairs Armoured / Unarmoured Cable

Technical Parameters

Voltage Grade	:	300 / 500 Volts
Relevant Standards	:	BS:5308/EN 52088
Cross Sectional Area	:	0.5 Sq.mm to 2.5 Sq.mm as per Spec. / IS
Conductor	:	Copper (Bare / Tinned)
Insulation	:	PVC / HR PVC / PE / XLPE / LSZH
Inner Sheath	:	Extruded PVC / FR /FRLSH/ ZERO HALOGEN (LSZH) (ST-1) or (ST-2)
Armouring/Braiding Material Type	: : :	 Galvanised Steel Round Wire / Flat Strip (for Armouring) Tinned / Bare Copper (Braiding)
Screening	:	Overall, Individual & Overall
Outer Sheath	:	Extruded PVC / FR /FRLSH/ ZERO HALOGEN (LSZH) (ST-1) or (ST-2)
Drum Length	:	500 / 1000 Mtrs.
Tolerance	:	+ /- 5%

FLEXIBLE WIRES & CABLES 450 / 600 / 1100 VOLTS

Single Core upto 1000 Sq.mm

Multicore upto 630 Sq.mm

Technical Parameters

Voltage Grade	:	450 / 600 / 1100 Volts
Relevant Standards	:	IS:694/2010, IEC -228 and BS-6004/95
Number of Cores	:	Single or Multicore
Cross Sectional Area	:	0.5 Sq.mm to 630 Sq.mm as per Spec. / IS
Conductor	:	Copper (Bare / Tinned)
Insulation	:	PVC Type A, C, D / PE / XLPE / LSZH
Sheath (Applicable for Multicore Cables)	:	Extruded PVC / FR /FRLSH / ZERO HALOGEN (LSZH) (ST-1) / (ST-2) / (ST-3)
Coil / Drum Length	:	100 / 200 / 500 / 1000 Mtrs.
Tolerance	:	+ /- 5%

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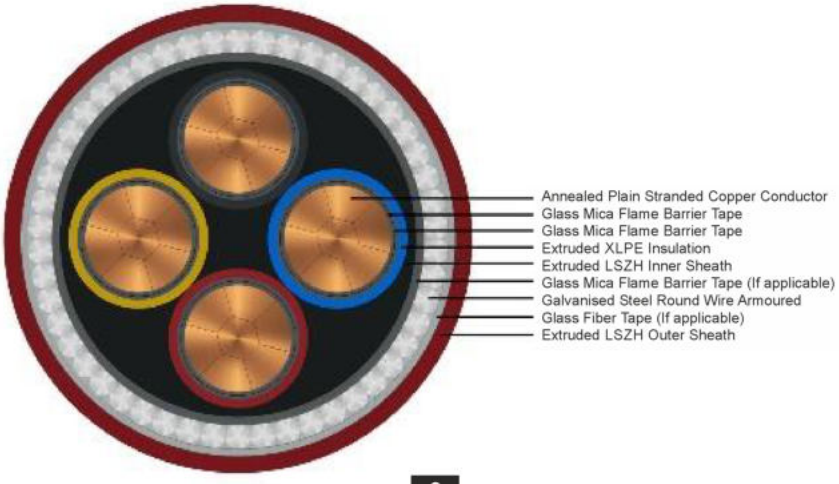
Aerial Bunched Cables

Product Range Aluminium Conductor, XLPE Insulation along with Bare / XLPE Insulated Messenger of Aluminium Alloy with Twisted together to form a Cable		
Technical Parameters Voltage Grade	:	1100 Volts
Relevant Standards	:	IS:14255/Part-1
Type of Conductor	:	Aluminium for Phase & Alum. Alloy for Messenger
Cross Sectional Area	:	16 Sq.mm to 150 Sq.mm as per Spec. / IS
Type of Insulation	:	XLPE
Drum Lengths	:	500 / 1000 Mtrs.
Tolerance	:	+/- 5%

Fire Survival Cables

Product Range Aluminium / Copper (Bare / Tinned) Conductor with Two layers of Glass Mica Flame Barrier Tape, XLPE Insulated, LSZH Inner Sheathed with overall Mica Tape (if required), Flat / Wire Armoured, overall LSZH outer sheathed		
Technical Parameters Voltage Grade	:	1100 Volts
Relevant Standards	:	BS:7846
Number of Cores & Cross Sectional Area	:	2 Core to 4 Core upto 400 Sq.mm 48 Cores upto 2.5 Sq.mm
Type of Conductor	:	Copper (Bare / Tinned) / Aluminium
Heat Barrier Tape	:	2 Layers of Heat Barrier Glass Mica Tape
Type of Insulation	:	XLPE / PE
Inner Sheath	:	LSZH
Armouring	:	Wire / Flat Strip
Outer Sheath	:	LSZH
Drum Lengths	:	500 / 1000 Mtrs.
Tolerance	:	+/- 5%



PROCESS DESCRIPTION

Wire Drawing	:	Wire to be drawn of required size on Wire Drawing Machine.
Annealing	:	Drawn Copper wires are further simultaneously annealed.
Stranding	:	Required conductor size to be manufactured with specified design on Stranding Machine.
Insulation	:	Conductor to be Insulated with XLPE / PVC / HDPE as per required specification.
Core Rewinding & Curing	:	Cores to be Spark tested, rewound & cured with specific requirements.
Inner Sheathing	:	To be done with required specification on Sheathing Line.
Armouring	:	To be done with required specification on Armouring Machine.
Outer Sheath	:	To be done with required specification on Sheathing Machine.
Rewinding & Testing	:	All cables are rewound on steel / wooden drums as per customer's requirement & tests are carried-out as per required specification.
Packing	:	All tested and passed cables are packed and marked in required sized drums prior to dispatch.

TYPICAL EXAMPLES of Design & Construction

Power Cable
Steel Strip Armoured

	IS Specification	
Conductor : EC Grade Aluminium	8130	Conductor : High Conductivity grade copper
Insulation :XLPE / PVC Type A or C	5831 / 7098	Insulation : XLPE / PVC Type A or C
Inner Sheath :Extruded / Taped	5831	Inner Sheath : Extruded / Taped
Armour : Galvanised Steel Strip / Wire	3975	Armour : Galvanised Steel Strip / Wire
Outer Sheath : PVC type ST-1, ST-2 & FRLSH For dimensional details see table.	5831	Outer Sheath : PVC Type ST-1 , ST-2 and FRLSH For dimensional details see table.

Control Cable
Steel Strip Armoured

CLASSIFICATION OF PVC COMPOUND

Type	A	C	ST-1/FRLSH	ST-2/FRLSH
Application	Insulation	Insulation	Sheath	Sheath
Max. Conductor Temp.	70°C	85°C	70°C	90°C

CORE IDENTIFICATION

For power cables and control cables up to 4 cores, the cores are identified by different colours as per IS 1554 : Part-1 / 1988

Single core	:	Red, Black, Yellow or Blue
2 core	:	Red and Black
3 core	:	Red, Yellow and Blue
3½	:	Red, Yellow, Blue & reduced neutral core in Black

Where the number of cores exceeds 5, core shall be identified by numbers. On specific request we can also provide core, two adjacent cores are Blue for reference and Yellow for direction in each layer. The remaining cores in each layer are grey.

PRODUCT CODES

As per IS : 1554 (Part-1)/1988 & 7098 (Part-1)/1988, the product is coded by alphabets :

Aluminum	A	PVC Insulation	Y
XLPE Insulation	2X	Steel round wire armour	W
Steel strip armour	F	PVC outer sheath	Y
Steel double round wire armour			WW
Steel double strip armour			FF
Non-magnetic round wire armour			Wa
Non-magnetic flat strip armour			Fa

No abbreviation is used for copper, the product code is stenciled on the drum flange's surface.

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SINGLE CORE ALUMINIUM PVC ARMOURED POWER CABLES IS:1554 (P-1) TABLE - 01

No. of cores & cross sectional area	No. of wires	Single Layer (AYWaY)					Single Layer- Strip (AYFaY)				Max. D.C. Resistance at 20°C	Max. A.C. Resistance at 70°C	Current Ratings		
		Nom. Thickness of PVC insulation (mm)	Nom. Dimensions of Amour wire (mm)	Min. Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Nominal thickness of armour strip (mm)	Minimum thickness of outer sheath (mm)	Approx overall diameter of cable (mm)	Approx weight of Aluminum cable kg/km	Ohms/Km	Ohms/Km	Direct in Ground	In Duct Amps	In Air Amps
1Cx4	1	1.30	1.40	1.24	11	160	–	–	–	–	7.4100	8.8900	35	30	29
1Cx6	1	1.30	1.40	1.24	12	180	–	–	–	–	4.6100	5.5300	46	39	38
1Cx10	1	1.30	1.40	1.24	13	210	–	–	–	–	3.0800	3.7000	57	48	48
1Cx16	7	1.30	1.40	1.24	14	240	–	–	–	–	1.9100	2.2900	74	62	63
1Cx25	7	1.50	1.40	1.24	15	310	–	–	–	–	1.2000	1.4400	95	80	85
1Cx35	7	1.50	1.40	1.24	16	360	–	–	–	–	0.8680	1.0400	114	96	103
1Cx50	7	1.70	1.40	1.24	18	450	–	–	–	–	0.6410	0.7700	134	113	124
1Cx70	19	1.70	1.40	1.40	20	560	–	–	–	–	0.4430	0.5300	165	138	157
1Cx95	19	1.90	1.60	1.40	22	720	0.8	1.4	21	660	0.3200	0.3800	201	165	198
1Cx120	19	1.90	1.60	1.40	24	830	0.8	1.4	23	750	0.2530	0.3000	230	188	230
1Cx150	19	2.10	1.60	1.40	27	980	0.8	1.4	24	900	0.2060	0.2500	256	210	261
1Cx185	37	2.30	1.60	1.40	28	1160	0.8	1.4	27	1050	0.1640	0.2000	290	237	302
1Cx240	37	2.50	1.60	1.56	31	1450	0.8	1.4	30	1300	0.1250	0.1500	335	274	357
1Cx300	37	2.70	2.00	1.56	35	1710	0.8	1.56	33	1600	0.1000	0.1200	377	307	409
1Cx400	61	3.00	2.00	1.56	39	2190	0.8	1.56	37	1950	0.0778	0.0934	430	349	479
1Cx500	61	3.40	2.00	1.72	40	2730	0.8	1.56	40	2450	0.0605	0.0726	486	395	554
1Cx630	61	3.90	2.00	1.88	48	3340	0.8	1.72	45	3100	0.0469	0.0563	547	443	638
1Cx800	61	3.90	2.00	1.88	52	4020	0.8	1.88	49	3700	0.0367	0.0440	609	492	727
1Cx1000	61	3.90	2.50	2.04	57	5000	0.8	2.04	55	4600	0.0291	0.0349	667	536	816

SINGLE CORE ALUMINIUM PVC UN-ARMOURED POWER CABLES IS:1554 (P-1) TABLE - 02

Type	No. of cores & cross sectional area	No. of wires	Nom. Thickness of PVC insulation (mm)	Nom. Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 70°C Ohms/Km	Current Ratings					
									Directin Ground (Amps)		In Duct (Amps)		In Air (Amps)	
									2 Core	3 Core	2 Core	3 Core	2 Core	3 Core
Ayy	1Cx4	1	1.00	1.80	8	100	7.4100	8.8900	35	31	30	28	29	25
Ayy	1Cx6	1	1.00	1.80	9	110	4.6100	5.5300	46	39	39	36	38	33
Ayy	1Cx10	1	1.00	1.80	10	130	3.0800	3.7000	57	49	48	45	48	42
Ayy	1Cx16	7	1.00	1.80	11	160	1.9100	2.2900	74	64	62	58	63	56
Ayy	1Cx25	7	1.20	1.80	12	220	1.2000	1.4400	95	82	80	74	85	74
Ayy	1Cx35	7	1.20	1.80	13	260	0.8680	1.0400	114	97	96	88	103	91
Ayy	1Cx50	7	1.40	1.80	15	330	0.6410	0.7700	134	115	113	103	124	110
Ayy	1Cx70	19	1.40	1.80	17	410	0.4430	0.5300	165	141	138	127	157	140
Ayy	1Cx95	19	1.60	1.80	19	530	0.3200	0.3800	201	169	165	151	198	177
Ayy	1Cx120	19	1.60	2.00	21	640	0.2530	0.3000	230	192	188	172	230	207
Ayy	1Cx150	19	1.80	2.00	23	770	0.2060	0.2500	256	214	210	191	261	235
Ayy	1Cx185	37	2.00	2.00	25	920	0.1640	0.2000	290	242	237	216	302	274
Ayy	1Cx240	37	2.20	2.00	28	1160	0.1250	0.1500	335	280	274	248	357	324
Ayy	1Cx300	37	2.40	2.00	30	1390	0.1000	0.1200	377	314	307	277	409	373
Ayy	1Cx400	61	2.60	2.20	35	1760	0.0778	0.0934	430	358	349	314	479	438
Ayy	1Cx500	61	3.00	2.20	39	2200	0.0605	0.0726	486	404	395	354	554	508
Ayy	1Cx630	61	3.40	2.40	44	2820	0.0469	0.0563	547	454	443	395	638	587
Ayy	1Cx800	61	3.40	2.40	48	3230	0.0367	0.0440	609	503	492	437	727	668
Ayy	1Cx1000	61	3.40	2.60	53	4080	0.0291	0.0349	667	550	536	474	816	750

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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2 CORE ALUMINIUM PVC ARMOURED POWER CABLES IS:1554 (P-1) TABLE - 03

Type	No. of cores & cross sectional area	No. of wires	Nom. Thickness of PVC insulation (mm)	Min. Thickness of PVC inner sheath (mm)	Nom. Dimensions of Amour (mm)		Min. Thickness of PVC outer sheath (mm)		Overall Diameter (Approx.) (mm)		Net Wt. of cable (Approx.) (Kg/Km)		Max. D.C. Resistance at 20°C	Max. A.C. Resistance at 70°C	Current Ratings		
					Strip	Wire	Strip Amour	Wire Amour	Strip Amour	Wire Amour	Strip Amour	Wire Amour	Ohms/Km	Ohms/Km	Direct in Ground Amps	In Duct Amps	In Air Amps
Aywy	2Cx2.5	1	0.9	0.3	-	1.40	-	1.24	-	15.0	-	400	12.1000	14.52	26	22	21
Aywy	2Cx4	1	1.0	0.3	-	1.40	-	1.24	-	16.5	-	500	7.4100	8.89	34	29	28
Aywy	2Cx6	1	1.0	0.3	-	1.40	-	1.24	-	17.5	-	600	4.6100	5.53	44	38	37
Aywy	2Cx10	1	1.0	0.3	-	1.40	-	1.24	-	19.0	-	620	3.0800	3.70	56	47	47
Aywy/Ayfy	2Cx16	7	1.0	0.3	4x0.8	1.60	1.40	1.40	20.5	22.5	500	730	1.9100	2.29	73	61	61
Aywy/Ayfy	2Cx25	7	1.2	0.3	4x0.8	1.60	1.40	1.40	21.0	23.0	700	860	1.2000	1.44	94	79	82
Aywy/Ayfy	2Cx35	7	1.2	0.3	4x0.8	1.60	1.40	1.40	22.5	24.0	760	1000	0.8680	1.04	113	95	100
Aywy/Ayfy	2Cx50	7	1.4	0.3	4x0.8	1.60	1.40	1.56	25.0	27.0	1000	1250	0.6410	0.77	133	112	122
Aywy/Ayfy	2Cx70	19	1.4	0.3	4x0.8	1.60	1.56	1.56	28.0	29.5	1230	1450	0.4430	0.53	163	137	153
Aywy/Ayfy	2Cx95	19	1.6	0.4	4x0.8	2.00	1.56	1.56	31.5	34.0	1520	2000	0.3200	0.38	195	164	188
Aywy/Ayfy	2Cx120	19	1.6	0.4	4x0.8	2.00	1.56	1.72	33.5	36.5	1765	2360	0.2530	0.30	220	185	215
Aywy/Ayfy	2Cx150	19	1.8	0.4	4x0.8	2.00	1.72	1.72	37.0	39.5	2080	2700	0.2060	0.25	245	207	245
Aywy/Ayfy	2Cx185	37	2.0	0.5	4x0.8	2.00	1.88	1.88	41.0	43.0	2500	3100	0.1640	0.20	276	234	282
Aywy/Ayfy	2Cx240	37	2.2	0.5	4x0.8	2.50	2.04	2.04	45.5	49.0	2975	4130	0.1250	0.15	318	270	333
Aywy/Ayfy	2Cx300	37	2.4	0.6	4x0.8	2.50	2.20	2.20	50.0	53.5	3660	4900	0.1000	0.12	356	303	381
Aywy/Ayfy	2Cx400	61	2.6	0.7	4x0.8	3.15	2.36	2.52	55.5	60.5	4560	6500	0.0778	0.09	402	342	440

2 CORE ALUMINIUM PVC UN-ARMOURED POWER CABLES IS:1554 (P-1) TABLE - 04

Type	No. of cores & cross sectional area	No. of wires	Nom. Thickness of PVC insulation (mm)	Min. Thickness of PVC inner sheath (mm)	Nom. Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 70°C Ohms/Km	Current Ratings		
										Direct in Ground Amps	In Duct Amps	In Air Amps
AYY	2Cx2.5	1	0.9	0.3	1.80	11.9	225	12.1000	14.52	26	22	21
AYY	2Cx4	1	1.0	0.3	1.80	13.4	250	7.4100	8.89	34	29	28
AYY	2Cx6	1	1.0	0.3	1.80	14.4	300	4.6100	5.53	44	38	37
AYY	2Cx10	1	1.0	0.3	1.80	15.9	370	3.0800	3.70	56	47	47
AYY	2Cx16	7	1.0	0.3	1.80	17.8	340	1.9100	2.29	73	61	61
AYY	2Cx25	7	1.2	0.3	2.00	18.7	440	1.2000	1.44	94	79	82
AYY	2Cx35	7	1.2	0.3	2.00	20.2	520	0.8680	1.04	113	95	100
AYY	2Cx50	7	1.4	0.3	2.00	22.7	650	0.6410	0.77	133	112	122
AYY	2Cx70	19	1.4	0.3	2.00	25.3	830	0.4430	0.53	163	137	153
AYY	2Cx95	19	1.6	0.4	2.20	29.0	1100	0.3200	0.38	195	164	188
AYY	2Cx120	19	1.6	0.4	2.20	31.0	1250	0.2530	0.30	220	185	215
AYY	2Cx150	19	1.8	0.4	2.40	34.5	1550	0.2060	0.25	245	207	245
AYY	2Cx185	37	2.0	0.5	2.40	37.5	1950	0.1640	0.20	276	234	282
AYY	2Cx240	37	2.2	0.5	2.60	42.5	2400	0.1250	0.15	318	270	333
AYY	2Cx300	37	2.4	0.6	2.80	46.5	2900	0.1000	0.12	356	303	381
AYY	2Cx400	61	2.6	0.7	3.20	52.5	3700	0.0778	0.09	402	342	440

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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3 CORE ALUMINIUM PVC ARMOURED POWER CABLES IS:1554 (P-1) TABLE - 05

Type	No. of cores & cross sectional area	No. of wires	Nom. Thickness of PVC insulation (mm)	Min. Thickness of PVC inner sheath (mm)	Nom. Dimensions of Amour (mm)		Min. Thickness of PVC outer sheath (mm)		Overall Diameter (Approx.) (mm)		Net Wt. of cable (Approx.) (Kg/Km)		Max. D.C. Resistance at 20°C	Max. A.C. Resistance at 70°C	Current Ratings		
					Strip	Wire	Strip Amour	Wire Amour	Strip Amour	Wire Amour	Strip Amour	Wire Amour	Ohms/Km	Ohms/Km	Direct in Ground Amps	In Duct Amps	In Air Amps
Aywy	3Cx2.5	1	0.9	0.3	-	1.40	-	1.24	-	15.0	-	500	12.1000	14.52	22	19	18
Aywy	3Cx4	1	1.0	0.3	-	1.40	-	1.24	-	16.5	-	595	7.4100	8.89	29	25	24
Aywy	3Cx6	1	1.0	0.3	-	1.40	-	1.24	-	17.5	-	685	4.6100	5.53	38	32	32
Aywy	3Cx10	1	1.0	0.3	-	1.40	-	1.40	-	19.5	-	830	3.0800	3.70	47	40	40
Aywy/Ayfy	3Cx16	7	1.0	0.3	4x0.8	1.60	1.40	1.40	19.5	21.0	680	890	1.9100	2.29	61	51	52
Aywy/Ayfy	3Cx25	7	1.2	0.3	4x0.8	1.60	1.40	1.40	22.5	24.0	880	1120	1.2000	1.44	78	66	70
Aywy/Ayfy	3Cx35	7	1.2	0.3	4x0.8	1.60	1.40	1.40	24.0	25.5	1025	1305	0.8680	1.04	94	79	85
Aywy/Ayfy	3Cx50	7	1.4	0.3	4x0.8	1.60	1.56	1.56	27.5	29.0	1310	1605	0.6410	0.77	111	93	104
Aywy/Ayfy	3Cx70	19	1.4	0.4	4x0.8	2.00	1.56	1.56	30.5	33.0	1630	2160	0.4430	0.53	136	115	131
Aywy/Ayfy	3Cx95	19	1.6	0.4	4x0.8	2.00	1.56	1.72	34.5	37.5	1990	2645	0.3200	0.38	163	138	162
Aywy/Ayfy	3Cx120	19	1.6	0.4	4x0.8	2.00	1.72	1.72	38.0	40.5	2375	2950	0.2530	0.30	185	156	186
Aywy/Ayfy	3Cx150	19	1.8	0.5	4x0.8	2.00	1.88	1.88	41.5	44.0	2825	3500	0.2060	0.25	206	175	212
Aywy/Ayfy	3Cx185	37	2.0	0.5	4x0.8	2.50	1.88	2.04	45.5	49.0	3365	4500	0.1640	0.20	234	198	245
Aywy/Ayfy	3Cx240	37	2.2	0.6	4x0.8	2.50	2.20	2.20	52.0	55.5	4250	5500	0.1250	0.15	271	230	291
Aywy/Ayfy	3Cx300	37	2.4	0.6	4x0.8	2.50	2.36	2.36	56.5	60.0	5140	6500	0.1000	0.12	305	260	335
Aywy/Ayfy	3Cx400	61	2.6	0.7	4x0.8	3.15	2.52	2.68	64.5	69.5	6270	8600	0.0778	0.09	348	297	390

3 CORE ALUMINIUM PVC UN-ARMOURED POWER CABLES IS:1554 (P-1) TABLE - 06

Type	No. of cores & cross sectional area	No. of wires	Nom. Thickness of PVC insulation (mm)	Min. Thickness of PVC inner sheath (mm)	Nom. Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 70°C Ohms/Km	Current Ratings		
										Direct in Ground Amps	In Duct Amps	In Air Amps
AYY	3Cx2.5	1	0.9	0.3	1.80	12.0	230	12.1000	14.52	22	19	18
AYY	3Cx4	1	1.0	0.3	1.80	13.5	300	7.4100	8.89	29	25	24
AYY	3Cx6	1	1.0	0.3	1.80	15.0	350	4.6100	5.53	38	32	32
AYY	3Cx10	1	1.0	0.3	1.80	16.6	435	3.0800	3.70	47	40	40
AYY	3Cx16	7	1.0	0.3	1.80	16.8	430	1.9100	2.29	61	51	52
AYY	3Cx25	7	1.2	0.3	2.00	20.2	600	1.2000	1.44	78	66	70
AYY	3Cx35	7	1.2	0.3	2.00	21.7	730	0.8680	1.04	94	79	85
AYY	3Cx50	7	1.4	0.3	2.00	24.8	920	0.6410	0.77	111	93	104
AYY	3Cx70	19	1.4	0.4	2.20	28.5	1215	0.4430	0.53	136	115	131
AYY	3Cx95	19	1.6	0.4	2.20	31.6	1545	0.3200	0.38	163	138	162
AYY	3Cx120	19	1.6	0.4	2.20	34.7	1830	0.2530	0.30	185	156	186
AYY	3Cx150	19	1.8	0.5	2.40	38.9	2250	0.2060	0.25	206	175	212
AYY	3Cx185	37	2.0	0.5	2.60	44.5	2760	0.1640	0.20	234	198	245
AYY	3Cx240	37	2.2	0.6	2.80	49.0	3515	0.1250	0.15	271	230	291
AYY	3Cx300	37	2.4	0.6	3.00	53.5	4275	0.1000	0.12	305	260	335
AYY	3Cx400	61	2.6	0.7	3.40	62.0	5400	0.0778	0.09	348	297	390

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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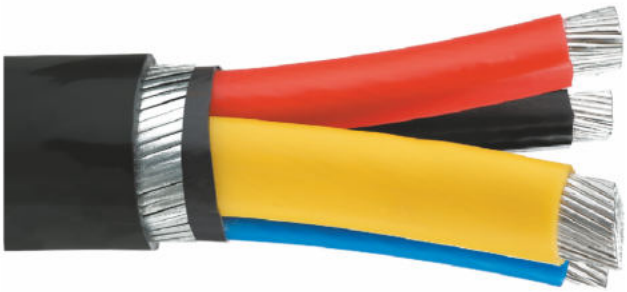
3.5 CORE ALUMINIUM PVC ARMOURED POWER CABLES IS:1554 (P-1) TABLE - 07

Type	No. of cores & cross sectional area	No. of wires	Nom. Thickness of PVC insulation (mm)	Min. Thickness of PVC inner sheath (mm)	Nom. Dimensions of Amour (mm)		Min. Thickness of PVC outer sheath (mm)		Overall Diameter (Approx.) (mm)		Net Wt. of cable (Approx.) (Kg/Km)		Max. D.C. Resistance at 20°C	Max. A.C. Resistance at 70°C	Current Ratings		
					Strip	Wire	Strip Amour	Wire Amour	Strip Amour	Wire Amour	Strip Amour	Wire Amour	Ohms/Km	Ohms/Km	Direct in Ground Amps	In Duct Amps	In Air Amps
Aywy/Ayfy	3.5Cx25	7/7	1.2/1.0	0.3	4x0.8	1.60	1.40	1.40	25.0	26.5	1000	1260	1.2000	1.44	78	66	70
Aywy/Ayfy	3.5Cx35	7/7	1.2/1.0	0.3	4x0.8	1.60	1.40	1.40	26.0	27.5	1100	1450	0.8680	1.04	94	79	85
Aywy/Ayfy	3.5Cx50	7/7	1.4/1.2	0.3	4x0.8	1.60	1.56	1.56	29.5	31.0	1400	1805	0.6410	0.77	111	93	104
Aywy/Ayfy	3.5Cx70	19/7	1.4/1.2	0.4	4x0.8	2.00	1.56	1.56	33.5	36.0	1810	2405	0.4430	0.53	136	115	131
Aywy/Ayfy	3.5Cx95	19/7	1.6/1.4	0.4	4x0.8	2.00	1.56	1.72	37.5	40.0	2200	3015	0.3200	0.38	163	138	162
Aywy/Ayfy	3.5Cx120	19/19	1.6/1.4	0.5	4x0.8	2.00	1.72	1.88	41.0	43.0	2700	3545	0.2530	0.30	185	156	186
Aywy/Ayfy	3.5Cx150	19/19	1.8/1.4	0.5	4x0.8	2.00	1.88	1.88	45.5	48.0	3115	4030	0.2060	0.25	206	175	212
Aywy/Ayfy	3.5Cx185	37/19	2.0/1.6	0.5	4x0.8	2.50	2.04	2.04	50.0	53.5	3700	5100	0.1640	0.20	234	198	245
Aywy/Ayfy	3.5Cx240	37/19	2.2/1.6	0.6	4x0.8	2.50	2.20	2.36	57.0	60.0	4750	6190	0.1250	0.15	271	230	291
Aywy/Ayfy	3.5Cx300	37/19	2.4/1.8	0.6	4x0.8	3.15	2.36	2.52	61.5	66.0	5700	8010	0.1000	0.12	305	260	335
Aywy/Ayfy	3.5Cx400	61/37	2.6/2.0	0.7	4x0.8	3.15	2.68	2.68	70.0	75.0	7000	9600	0.0778	0.09	348	297	390



3.5 CORE ALUMINIUM PVC UN-ARMOURED POWER CABLES IS:1554 (P-1) TABLE - 08

Type	No. of cores & cross sectional area	No. of wires	Nom. Thickness of PVC insulation (mm)	Min. Thickness of PVC inner sheath (mm)	Nom. Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 70°C Ohms/Km	Current Ratings		
										Direct in Ground Amps	In Duct Amps	In Air Amps
AYY	3.5Cx25	7/7	1.2/1.0	0.3	2.00	22.70	660	1.2000	1.44	78	66	70
AYY	3.5Cx35	7/7	1.2/1.0	0.3	2.00	24.00	800	0.8680	1.04	94	79	85
AYY	3.5Cx50	7/7	1.4/1.2	0.3	2.00	27.00	1000	0.6410	0.77	111	93	104
AYY	3.5Cx70	19/7	1.4/1.2	0.4	2.20	31.00	1350	0.4430	0.53	136	115	131
AYY	3.5Cx95	19/7	1.6/1.4	0.4	2.20	35.00	1700	0.3200	0.38	163	138	162
AYY	3.5Cx120	19/19	1.6/1.4	0.5	2.40	40.00	2100	0.2530	0.30	185	156	186
AYY	3.5Cx150	19/19	1.8/1.4	0.5	2.40	42.30	2500	0.2060	0.25	206	175	212
AYY	3.5Cx185	37/19	2.0/1.6	0.5	2.60	46.80	3100	0.1640	0.20	234	198	245
AYY	3.5Cx240	37/19	2.2/1.6	0.6	3.00	54.50	4000	0.1250	0.15	271	230	291
AYY	3.5Cx300	37/19	2.4/1.8	0.6	3.20	59.00	4900	0.1000	0.12	305	260	335
AYY	3.5Cx400	61/37	2.6/2.0	0.7	3.40	67.00	6200	0.0778	0.09	348	297	390

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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4 CORE ALUMINIUM PVC ARMOURED POWER CABLES IS:1554 (P-I) TABLE - 09

Type	No. of cores & cross sectional area	No. of wires	Nom. Thickness of PVC insulation (mm)	Min. Thickness of PVC inner sheath (mm)	Nom. Dimensions of Amour (mm)		Min. Thickness of PVC outer sheath (mm)		Overall Diameter (Approx.) (mm)		Net Wt. of cable (Approx.) (Kg/Km)		Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 70°C Ohms/Km	Current Ratings		
					Strip	Wire	Strip Amour	Wire Amour	Strip Amour	Wire Amour	Strip Amour	Wire Amour			Direct in Ground Amps	In Duct Amps	In Air Amps
Aywy	4Cx2.5	1	0.9	0.3	-	1.40	-	1.24	-	16.0	-	505	12.1000	14.52	22	19	18
Aywy	4Cx4	1	1.0	0.3	-	1.40	-	1.24	-	17.5	-	605	7.4100	8.89	29	25	24
Aywy	4Cx6	1	1.0	0.3	-	1.40	-	1.24	-	19.0	-	680	4.6100	5.53	38	32	32
Aywy/Ayfy	4Cx10	1	1.0	0.3	4x0.8	1.60	1.40	1.40	21.5	23.0	700	820	3.0800	3.70	47	40	40
Aywy/Ayfy	4Cx16	7	1.0	0.3	4x0.8	1.60	1.40	1.40	23.0	25.0	760	1000	1.9100	2.29	61	51	52
Aywy/Ayfy	4Cx25	7	1.2	0.3	4x0.8	1.60	1.40	1.40	25.0	27.0	1020	1300	1.2000	1.44	78	66	70
Aywy/Ayfy	4Cx35	7	1.2	0.3	4x0.8	1.60	1.40	1.56	27.5	30.0	1200	1500	0.8680	1.04	94	79	85
Aywy/Ayfy	4Cx50	7	1.4	0.4	4x0.8	1.60	1.56	1.56	32.0	34.5	1540	2100	0.6410	0.77	111	93	104
Aywy/Ayfy	4Cx70	19	1.4	0.4	4x0.8	2.00	1.56	1.56	36.5	38.0	1910	2500	0.4430	0.53	136	115	131
Aywy/Ayfy	4Cx95	19	1.6	0.4	4x0.8	2.00	1.72	1.72	40.0	42.5	2400	3100	0.3200	0.38	163	138	162
Aywy/Ayfy	4Cx120	19	1.6	0.5	4x0.8	2.00	1.88	1.88	44.5	47.0	2900	3700	0.2530	0.30	185	156	186
Aywy/Ayfy	4Cx150	19	1.8	0.5	4x0.8	2.50	1.88	2.04	48.0	51.5	3400	4750	0.2060	0.25	206	175	212
Aywy/Ayfy	4Cx185	37	2.0	0.6	4x0.8	2.50	2.04	2.20	53.0	57.0	4130	5700	0.1640	0.20	234	198	245
Aywy/Ayfy	4Cx240	37	2.2	0.6	4x0.8	2.50	2.36	2.36	60.0	64.0	5190	6800	0.1250	0.15	271	230	291
Aywy/Ayfy	4Cx300	37	2.4	0.7	4x0.8	3.15	2.52	2.68	65.5	71.0	6300	9200	0.1000	0.12	305	260	335
Aywy/Ayfy	4Cx400	61	2.6	0.7	4x0.8	3.15	2.84	2.84	73.0	78.0	7800	10800	0.0778	0.09	348	297	390

4 CORE ALUMINIUM PVC UN-ARMOURED POWER CABLES IS:1554 (P-I) TABLE - 10

Type	No. of cores & cross sectional area	No. of wires	Nom. Thickness of PVC insulation (mm)	Min. Thickness of PVC inner sheath (mm)	Nom. Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 70°C Ohms/Km	Current Ratings		
										Direct in Ground Amps	In Duct Amps	In Air Amps
AYY	4Cx2.5	1	0.9	0.3	1.80	13.20	270	12.1000	14.52	22	19	18
AYY	4Cx4	1	1.0	0.3	1.80	15.0	340	7.4100	8.89	29	25	24
AYY	4Cx6	1	1.0	0.3	1.80	16.0	420	4.6100	5.53	38	32	32
AYY	4Cx10	1	1.0	0.3	1.80	19.0	510	3.0800	3.70	47	40	40
AYY	4Cx16	7	1.0	0.3	2.00	21.5	550	1.9100	2.29	61	51	52
AYY	4Cx25	7	1.2	0.3	2.00	23.0	750	1.2000	1.44	78	66	70
AYY	4Cx35	7	1.2	0.3	2.00	25.0	900	0.8680	1.04	94	79	85
AYY	4Cx50	7	1.4	0.4	2.20	29.5	1200	0.6410	0.77	111	93	104
AYY	4Cx70	19	1.4	0.4	2.20	34.0	1520	0.4430	0.53	136	115	131
AYY	4Cx95	19	1.6	0.4	2.40	37.5	2000	0.3200	0.38	163	138	162
AYY	4Cx120	19	1.6	0.5	2.40	41.5	2380	0.2530	0.30	185	156	186
AYY	4Cx150	19	1.8	0.5	2.60	45.5	2900	0.2060	0.25	206	175	212
AYY	4Cx185	37	2.0	0.6	2.80	50.0	3580	0.1640	0.20	234	198	245
AYY	4Cx240	37	2.2	0.6	3.00	57.0	4530	0.1250	0.15	271	230	291
AYY	4Cx300	37	2.4	0.7	3.40	63.2	5680	0.1000	0.12	305	260	335
AYY	4Cx400	61	2.6	0.7	3.60	70.0	7040	0.0778	0.09	348	297	390

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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1 CORE COPPER PVC ARMOURED POWER CABLES IS:1554 (P-I) TABLE - 11

Type	No. of cores &cross sectional area (sqmm)	No. of wires	Thickness of PVC insulation Nom. (mm)	Nominal Dimensions of Armour Wire (mm)	Min. Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Approx. Net Wt. of cable (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 70°C Ohms/Km	Current Ratings					
										Direct in Ground		In Duct		In Air	
										2 Cables ac Amps	3 Cables ac Amps	2 Cables ac Amps	3 Cables ac Amps	2 Cables ac Amps	3 Cables ac Amps
YWaY	1Cx4	1	1.3	1.40	1.24	11	178	4.61	5.52	45	39	38	35	37	32
YWaY	1Cx6	1	1.3	1.40	1.24	12	212	3.08	3.69	56	48	47	44	46	40
YWaY	1Cx10	7	1.3	1.40	1.24	13	264	1.83	2.19	74	64	63	58	63	55
YWaY	1Cx16	7	1.3	1.40	1.24	14	325	1.15	1.38	95	82	80	75	82	72
YWaY	1Cx25	7	1.5	1.40	1.24	15	448	0.727	0.870	123	105	103	95	109	96
YWaY	1Cx35	7	1.5	1.40	1.24	16	555	0.524	0.627	147	125	123	114	133	117
YWaY	1Cx50	7	1.7	1.40	1.24	18	705	0.387	0.463	173	148	145	133	160	142
YWaY	1Cx70	19	1.7	1.40	1.40	20	941	0.268	0.321	213	181	178	163	202	180
YWaY	1Cx95	19	1.9	1.60	1.40	22	1260	0.193	0.231	259	217	213	194	254	228
YWaY	1Cx120	19	1.9	1.60	1.40	24	1512	0.153	0.184	295	246	242	220	295	265
YWaY	1Cx150	19	2.1	1.60	1.40	27	1819	0.124	0.149	329	275	269	245	335	302
YWaY	1Cx185	37	2.3	1.60	1.40	28	2271	0.0991	0.120	371	309	303	275	386	349
YWaY	1Cx240	37	2.5	1.60	1.56	31	2854	0.0754	0.0912	427	355	348	315	454	412
YWaY	1Cx300	37	2.8	2.00	1.56	35	3464	0.0601	0.0739	477	397	389	350	518	472
YWaY	1Cx400	61	3.0	2.00	1.56	39	4426	0.0470	0.0592	538	446	437	392	600	547
YWaY	1Cx500	61	3.4	2.00	1.72	40	5504	0.0366	0.0468	600	496	486	434	684	625
YWaY	1Cx630	61	3.9	2.00	1.88	48	7161	0.0283	0.0379	662	547	535	447	773	708
YWaY	1Cx800	61	3.9	2.00	1.88	52	9000	0.0221	0.0314	718	594	579	516	859	790
YWaY	1Cx1000	61	4.0	2.50	2.04	57	11091	0.0176	0.0271	763	635	613	548	935	868

1 CORE COPPER PVC UN-ARMOURED POWER CABLES IS:1554 (P-I) TABLE - 12

Type	No. of cores &cross sectional area (sqmm)	No. of wires	Thickness of PVC insulation Nom. (mm)	Nominal Thickness of PVC Outer Sheath (mm)	Overall Diameter (Approx.) (mm)	Approx. Net Wt. of cable (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 70°C Ohms/Km	Current Ratings					
									Direct in Ground		In Duct		In Air	
									2 Cables ac Amps	3 Cables ac Amps	2 Cables ac Amps	3 Cables ac Amps	2 Cables ac Amps	3 Cables ac Amps
YY	1Cx4	1	1.00	1.80	8	115	4.61	5.52	45	39	38	35	37	32
YY	1Cx6	1	1.00	1.80	9	143	3.08	3.69	56	48	47	44	46	40
YY	1Cx10	7	1.00	1.80	10	189	1.83	2.19	74	64	63	58	63	55
YY	1Cx16	7	1.00	1.80	11	246	1.15	1.38	95	82	80	75	82	72
YY	1Cx25	7	1.20	1.80	12	357	0.727	0.87	123	105	103	95	109	96
YY	1Cx35	7	1.20	1.80	13	456	0.524	0.627	147	125	123	114	133	117
YY	1Cx50	7	1.40	1.80	15	595	0.387	0.463	173	148	145	133	160	142
YY	1Cx70	7	1.40	1.80	17	802	0.268	0.321	213	181	178	163	202	180
YY	1Cx95	19	1.60	1.80	19	1083	0.193	0.231	259	217	213	194	254	228
YY	1Cx120	19	1.60	2.00	21	1332	0.153	0.184	295	246	242	220	295	265
YY	1Cx150	19	1.80	2.00	23	1616	0.124	0.149	329	275	269	245	335	302
YY	1Cx185	37	2.00	2.00	25	2048	0.0991	0.12	371	309	303	275	386	349
YY	1Cx240	37	2.20	2.00	28	2562	0.0754	0.0912	427	355	348	315	454	412
YY	1Cx300	37	2.40	2.00	30	3159	0.0601	0.074	477	397	389	350	518	472
YY	1Cx400	61	2.60	2.20	35	4019	0.0470	0.0592	538	446	437	392	600	547
YY	1Cx500	61	3.00	2.20	39	4996	0.0366	0.0468	600	496	486	434	684	625
YY	1Cx630	61	3.40	2.40	44	6570	0.0283	0.0379	662	547	535	447	773	708
YY	1Cx800	61	3.40	2.40	48	8248	0.0221	0.0314	718	594	579	516	859	790
YY	1Cx1000	61	3.40	2.60	53	10219	0.0176	0.0271	763	635	613	548	935	868

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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2 CORE COPPER PVC ARMOURED POWER CABLES IS:1554 (P-I) TABLE - 13

Type	No. of cores & cross sectional area (sqmm)	No. of wires	Thickness of PVC insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Dimensions of Armour		Min. Thickness of PVC Outer Sheath		Overall Diameter (Approx)		Approx. Net Wt. of Cable		Max. D.C. Resistance at 20°C	Max. A.C. Resistance at 70°C	Current Ratings		
					Strip mm	Wire mm	Strip mm	Wire mm	Strip mm	Wire mm	Strip kg/km	Wire kg/km	Ohms/Km	Ohms/Km	Direct in Ground	In Duct Amps	In Air Amps
YWY	2Cx1.5	1	0.8	0.3	–	1.40	–	1.24	–	13.5	–	407	12.1	14.5	25	22	20
YWY	2Cx2.5	1	0.9	0.3	–	1.40	–	1.24	–	15.0	–	482	7.41	8.87	33	28	26
YWY	2Cx4	1	1.0	0.3	–	1.40	–	1.24	–	16.5	–	596	4.61	5.52	43	37	36
YWY	2Cx6	1	1.0	0.3	–	1.40	–	1.24	–	17.5	–	711	3.08	3.69	54	46	45
YWY	2Cx10	7	1.0	0.3	–	1.40	–	1.24	–	19.0	–	863	1.83	2.19	72	61	61
YWY/YFY	2Cx16	7	1.0	0.3	4x0.8	1.60	1.40	1.40	20.5	22.5	749	912	1.15	1.38	94	79	79
YWY/YFY	2Cx25	7	1.2	0.3	4x0.8	1.60	1.40	1.40	21.0	23.0	994	1197	0.727	0.87	121	102	106
YWY/YFY	2Cx35	7	1.2	0.3	4x0.8	1.60	1.40	1.40	22.5	24.0	1222	1531	0.524	0.627	145	122	129
YWY/YFY	2Cx50	7	1.4	0.3	4x0.8	1.60	1.40	1.56	25.0	27.0	1550	1836	0.387	0.463	172	144	157
YWY/YFY	2Cx70	19	1.4	0.3	4x0.8	1.60	1.56	1.56	28.0	29.5	2035	2316	0.268	0.321	210	176	197
YWY/YFY	2Cx95	19	1.6	0.4	4x0.8	2.00	1.56	1.56	31.5	34.0	2649	3187	0.193	0.231	250	210	241
YWY/YFY	2Cx120	19	1.6	0.4	4x0.8	2.00	1.56	1.72	33.5	36.5	3185	3775	0.153	0.184	281	237	275
YWY/YFY	2Cx150	19	1.8	0.4	4x0.8	2.00	1.72	1.72	37.0	39.5	3835	4449	0.124	0.149	313	264	313
YWY/YFY	2Cx185	37	2.0	0.5	4x0.8	2.00	1.88	1.88	41.0	43.0	4689	5359	0.0991	0.120	351	297	358
YWY/YFY	2Cx240	37	2.2	0.5	4x0.8	2.50	2.04	2.04	45.5	49.0	5962	7100	0.0754	0.0912	401	340	420
YWY/YFY	2Cx300	61	2.4	0.6	4x0.8	2.50	2.20	2.20	50.0	53.5	7384	8562	0.0601	0.0739	445	378	477
YWY/YFY	2Cx400	61	2.6	0.7	4x0.8	3.15	2.36	2.52	55.5	60.5	9188	11171	0.0470	0.0592	495	421	543

2 CORE COPPER PVC UN-ARMOURED POWER CABLES IS:1554 (P-I) TABLE - 14

Type	No. of cores & cross sectional area (sqmm)	No. of wires	Thickness of PVC insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nom. Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 70°C Ohms/Km	Current Ratings		
										Direct in Ground Amps	In Duct Amps	In Air Amps
YY	2Cx1.5	1	0.80	0.30	1.80	10.40	185	12.1	14.5	25	22	20
YY	2Cx2.5	1	0.90	0.30	1.80	11.90	230	7.41	8.87	33	28	26
YY	2Cx4	1	1.00	0.30	1.80	13.40	316	4.61	5.52	43	37	36
YY	2Cx6	1	1.00	0.30	1.80	14.40	397	3.08	3.69	54	46	45
YY	2Cx10	7	1.00	0.30	1.80	15.90	515	1.83	2.19	72	61	61
YY	2Cx16	7	1.00	0.30	1.80	17.80	521	1.15	1.38	94	79	79
YY	2Cx25	7	1.20	0.30	2.00	18.70	766	0.727	0.87	121	102	106
YY	2Cx35	7	1.20	0.30	2.00	20.20	971	0.524	0.627	145	122	129
YY	2Cx50	7	1.40	0.30	2.00	22.70	1258	0.387	0.463	172	144	157
YY	2Cx70	19	1.40	0.30	2.00	25.30	1676	0.268	0.321	210	176	197
YY	2Cx95	19	1.60	0.40	2.20	29.00	2276	0.193	0.231	250	210	241
YY	2Cx120	19	1.60	0.40	2.20	31.00	2760	0.153	0.184	281	237	275
YY	2Cx150	19	1.80	0.40	2.40	34.50	3366	0.124	0.149	313	264	313
YY	2Cx185	37	2.00	0.50	2.40	37.50	4143	0.0991	0.120	351	297	358
YY	2Cx240	37	2.20	0.50	2.60	42.50	5353	0.0754	0.0912	401	340	420
YY	2Cx300	37	2.40	0.60	2.80	46.50	6654	0.0601	0.0739	445	378	477
YY	2Cx400	61	2.60	0.70	3.20	52.50	8466	0.0470	0.0532	495	421	543

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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3 CORE COPPER PVC ARMOURED POWER CABLES IS:1554 (P-I) TABLE - 15

Type	No. of cores &cross sectional area (sqmm)	No. of wires	Thickness of PVC insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Dimensions of Armour		Min. Thickness of PVC Outer Sheath		Overall Diameter (Approx)		Approx. Net Wt. of Cable		Max. D.C. Resistance at 20°C	Max. A.C. Resistance at 70°C	Current Ratings		
					Strip mm	Wire mm	Strip mm	Wire mm	Strip mm	Wire mm	Strip kg/km	Wire kg/km	Ohms/Km	Ohms/Km	Direct in Ground	In Duct Amps	In Air Amps
YWY	3Cx1.5	1	0.8	0.3	–	1.4	–	1.24	–	14.0	–	430	12.1	14.5	21	18	17
YWY	3Cx2.5	1	0.9	0.3	–	1.4	–	1.24	–	15.0	–	520	7.41	8.87	28	24	23
YWY	3Cx4	1	1.00	0.3	–	1.4	–	1.24	–	16.5	–	663	4.61	5.52	37	31	30
YWY	3Cx6	1	1.00	0.3	–	1.4	–	1.24	–	17.5	–	789	3.08	3.69	46	39	39
YWY	3Cx10	7	1.00	0.3	–	1.4	–	1.40	–	19.5	–	1017	1.83	2.19	61	51	53
YWY/YFY	3Cx16	7	1.00	0.3	4x0.8	1.6	1.40	1.40	19.5	21.0	949	1153	1.15	1.38	78	66	67
YWY/YFY	3Cx25	7	1.20	0.3	4x0.8	1.6	1.40	1.40	22.5	24.0	1339	1553	0.727	0.87	101	85	90
YWY/YFY	3Cx35	7	1.20	0.3	4x0.8	1.6	1.40	1.40	24.0	25.5	1687	1915	0.524	0.627	121	102	110
YWY/YFY	3Cx50	7	1.40	0.3	4x0.8	1.6	1.56	1.56	27.5	29.0	2170	2430	0.387	0.463	143	120	134
YWY/YFY	3Cx70	19	1.40	0.4	4x0.8	2.0	1.56	1.56	30.5	33.0	2863	3388	0.268	0.321	175	147	169
YWY/YFY	3Cx95	19	1.60	0.4	4x0.8	2.0	1.56	1.72	34.5	37.5	3753	4362	0.193	0.231	210	177	209
YWY/YFY	3Cx120	19	1.60	0.4	4x0.8	2.0	1.72	1.72	38.5	40.5	4568	5221	0.153	0.184	237	200	238
YWY/YFY	3Cx150	19	1.80	0.5	4x0.8	2.0	1.88	1.88	41.5	44.0	5556	6261	0.124	0.149	265	224	272
YWY/YFY	3Cx185	37	2.00	0.5	4x0.8	2.5	1.88	2.04	45.5	49.0	6763	7948	0.0991	0.120	300	254	314
YWY/YFY	3Cx240	37	2.20	0.6	4x0.8	2.5	2.20	2.20	52.0	55.5	8719	10062	0.0754	0.0912	345	293	371
YWY/YFY	3Cx300	37	2.40	0.6	4x0.8	2.5	2.36	2.36	56.5	60.0	10665	12132	0.0601	0.0739	387	330	425
YWY/YFY	3Cx400	61	2.60	0.7	4x0.8	3.2	2.52	2.68	64.5	69.5	13490	15954	0.0470	0.0592	436	372	490

3 CORE COPPER PVC UN-ARMOURED POWER CABLES IS:1554 (P-I) TABLE - 16

Type	No. of cores & cross sectional area (sqmm)	No. of wires	Thickness of PVC insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nom. Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance (Approx.) at 20°C Ohms/Km	Max. A.C. Resistance at 70°C Ohms/Km	Current Ratings		
										Direct in Ground Amps	In Duct Amps	In Air Amps
YY	3Cx1.5	1	0.80	0.30	1.80	11.00	190	12.10	14.50	21	18	17
YY	3Cx2.5	1	0.90	0.30	1.80	12.00	240	7.41	8.87	28	24	23
YY	3Cx4	1	1.00	0.30	1.80	13.50	372	4.61	5.52	37	31	30
YY	3Cx6	1	1.00	0.30	1.80	14.40	470	3.08	3.69	46	39	39
YY	3Cx10	7	1.00	0.30	1.80	15.60	629	1.83	2.19	61	51	53
YY	3Cx16	7	1.00	0.30	1.80	16.80	723	1.15	1.38	78	66	67
YY	3Cx25	7	1.20	0.30	2.00	20.20	1063	0.73	0.87	101	85	90
YY	3Cx35	7	1.20	0.30	2.00	21.70	1367	0.524	0.627	121	102	110
YY	3Cx50	7	1.40	0.30	2.00	24.80	1783	0.387	0.463	143	120	134
YY	3Cx70	19	1.40	0.40	2.20	28.50	2458	0.268	0.321	175	147	169
YY	3Cx95	19	1.60	0.40	2.20	31.60	3276	0.193	0.231	210	177	209
YY	3Cx120	19	1.60	0.40	2.20	34.70	4009	0.153	0.184	237	200	238
YY	3Cx150	19	1.80	0.50	2.40	38.90	4939	0.124	0.149	265	224	272
YY	3Cx185	37	2.00	0.50	2.60	44.50	6114	0.099	0.120	300	254	314
YY	3Cx240	37	2.20	0.60	2.80	49.00	7928	0.075	0.0912	345	293	371
YY	3Cx300	37	2.40	0.60	3.00	53.50	9817	0.060	0.0739	387	330	425
YY	3Cx400	61	2.60	0.70	3.40	62.00	12540	0.0470	0.0592	436	372	490

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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3.5 CORE COPPER PVC ARMOURED POWER CABLES IS:1554 (P-I) TABLE - 17

Type	No. of cores &cross sectional area (mm²)	No. of wires	Thickness of PVC insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Dimensions of Armour		Min. Thickness of PVC Outer Sheath		Overall Diameter (Approx)		Approx. Net Wt. of Cable		Max.D.C. Resistance at 20°C	Max.A.C. Resistance at 70°C	Current Ratings		
					Strip mm	Wire mm	Strip mm	Wire mm	Strip mm	Wire mm	Strip kg/km	Wire kg/km	Ohms/Km	Ohms/Km	Direct in Ground	In Duct Amps	In Air Amps
YWY/YFY	3.5CX25/16	7/7	1.2/1.0	0.3	4x0.8	1.60	1.40	1.40	25.0	26.5	1584	1828	0.727	0.87	101	85	90
YWY/YFY	3.5CX35/16	7/7	1.2/1.0	0.3	4x0.8	1.60	1.40	1.40	26.0	27.5	1896	2146	0.524	0.627	121	102	110
YWY/YFY	3.5CX50/25	7/7	1.4/1.2	0.3	4x0.8	1.60	1.56	1.56	29.5	31.0	2480	2763	0.387	0.463	143	120	134
YWY/YFY	3.5CX70/35	19/7	1.4/1.2	0.4	4x0.8	2.00	1.56	1.56	33.5	36.0	3302	3876	0.268	0.321	175	147	169
YWY/YFY	3.5CX95/50	19/7	1.6/1.4	0.4	4x0.8	2.00	1.56	1.72	37.5	40.0	4349	4976	0.193	0.231	210	177	209
YWY/YFY	3.5CX120/70	19/19	1.6/1.4	0.5	4x0.8	2.00	1.72	1.88	41.0	43.0	5335	6011	0.153	0.184	237	200	238
YWY/YFY	3.5CX150/70	19/19	1.8/1.4	0.5	4x0.8	2.00	1.88	1.88	45.5	48.0	6359	7116	0.124	0.149	265	224	272
YWY/YFY	3.5CX185/95	37/19	2.0/1.6	0.5	4x0.8	2.50	2.04	2.04	50.0	53.5	7821	9105	0.0991	0.120	300	254	314
YWY/YFY	3.5CX240/120	37/19	2.2/1.6	0.6	4x0.8	2.50	2.20	2.36	57.0	60.0	10027	11464	0.0754	0.0912	345	293	371
YWY/YFY	3.5CX300/150	37/19	2.4/1.8	0.6	4x0.8	3.15	2.36	2.52	61.5	66.0	12277	14600	0.0601	0.0739	387	330	425
YWY/YFY	3.5CX400/185	61/37	2.6/2.0	0.7	4x0.8	3.15	2.68	2.68	70.0	75.0	15402	18083	0.0470	0.0592	436	372	490

3.5 CORE COPPER PVC UN-ARMOURED POWER CABLES IS:1554 (P-I) TABLE - 18

Type	No. of cores & cross sectional area (sqmm)	No. of wires	Thickness of PVC insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nom. Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance (Approx.) at 20°C Ohms/Km	Max. A.C. Resistance at 70°C Ohms/Km	Current Ratings		
										Direct in Ground Amps	In Duct Amps	In Air Amps
YY	3.5CX25/16	7/7	1.2/1.0	0.30	2.00	22.70	1255	0.73	0.87	101	85	90
YY	3.5CX35/16	7/7	1.2/1.0	0.30	2.00	24.00	1561	0.524	0.627	121	102	110
YY	3.5CX50/25	7/7	1.4/1.2	0.30	2.00	27.00	2071	0.387	0.463	143	120	134
YY	3.5CX70/35	19/7	1.4/1.2	0.40	2.20	31.00	2845	0.268	0.321	175	147	169
YY	3.5CX95/50	19/7	1.6/1.4	0.40	2.20	35.00	3804	0.193	0.231	210	177	209
YY	3.5CX120/70	19/19	1.6/1.4	0.50	2.40	40.00	4788	0.153	0.184	237	200	238
YY	3.5CX150/70	19/19	1.8/1.4	0.50	2.40	42.30	5673	0.124	0.149	265	224	272
YY	3.5CX185/95	37/19	2.0/1.6	0.50	2.60	46.80	7080	0.099	0.1200	300	254	314
YY	3.5CX240/120	37/19	2.2/1.6	0.60	3.00	54.50	9194	0.075	0.0912	345	293	371
YY	3.5CX300/150	37/19	2.4/1.8	0.60	3.20	59.00	11400	0.060	0.0739	387	330	425
YY	3.5CX400/185	61/37	2.6/2.0	0.70	3.40	67.00	14395	0.0470	0.0592	436	372	490

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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4 CORE COPPER PVC ARMOURED POWER CABLES IS:1554 (P-I) TABLE - 19

Type	No. of cores &cross sectional area (mm²)	No. of wires	Thickness of PVC insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Dimensions of Armour		Min. Thickness of PVC Outer Sheath		Overall Diameter (Approx)		Approx. Net Wt. of Cable		Max.D.C. Resistance at 20°C	Max.A.C. Resistance at 70°C	Current Ratings		
					Strip mm	Wire mm	Strip mm	Wire mm	Strip mm	Wire mm	Strip kg/km	Wire kg/km	Ohms/Km	Ohms/Km	Direct in Ground	In Duct Amps	In Air Amps
YWY	4Cx1.5	1	0.8	0.3	–	1.40	–	1.24	–	14.5	–	490	12.1	14.5	21	18	17
YWY	4Cx2.5	1	0.9	0.3	–	1.40	–	1.24	–	16.0	–	590	7.41	8.87	28	24	23
YWY	4Cx4	1	1.0	0.3	–	1.40	–	1.24	–	17.5	–	771	4.61	5.52	37	31	30
YWY	4Cx6	1	1.0	0.3	–	1.40	–	1.24	–	19.0	–	947	3.08	3.69	46	39	39
YWY/YFY	4Cx10	7	1.0	0.3	4x0.8	1.60	1.40	1.40	21.5	23.0	1045	1273	1.83	2.19	61	51	53
YWY/YFY	4Cx16	7	1.0	0.3	4x0.8	1.60	1.40	1.40	23.0	25.0	1198	1421	1.15	1.38	78	66	67
YWY/YFY	4Cx25	7	1.2	0.3	4x0.8	1.60	1.40	1.40	25.0	27.0	1666	1936	0.727	0.87	101	85	90
YWY/YFY	4Cx35	7	1.2	0.3	4x0.8	1.60	1.40	1.56	27.5	30.0	2105	2436	0.524	0.627	121	102	110
YWY/YFY	4Cx50	7	1.4	0.4	4x0.8	2.00	1.56	1.56	32.0	34.5	2732	3288	0.387	0.463	143	120	134
YWY/YFY	4Cx70	19	1.4	0.4	4x0.8	2.00	1.56	1.56	36.5	38.0	3624	4262	0.268	0.321	175	147	169
YWY/YFY	4Cx95	19	1.6	0.4	4x0.8	2.00	1.72	1.72	40.0	42.5	4806	5525	0.193	0.231	210	177	209
YWY/YFY	4Cx120	19	1.6	0.5	4x0.8	2.00	1.88	1.88	44.5	47.0	5884	6660	0.153	0.184	237	200	238
YWY/YFY	4Cx150	19	1.8	0.5	4x0.8	2.50	1.88	2.04	48.0	51.5	7086	8369	0.124	0.149	265	224	272
YWY/YFY	4Cx185	37	2.0	0.6	4x0.8	2.50	2.04	2.20	53.0	57.0	8724	10183	0.0991	0.120	300	254	314
YWY/YFY	4Cx240	37	2.2	0.6	4x0.8	2.50	2.36	2.36	60.0	64.0	11238	12807	0.0754	0.0912	345	293	371
YWY/YFY	4Cx300	37	2.4	0.7	4x0.8	3.15	2.52	2.68	65.5	71.0	13887	16488	0.0601	0.0739	387	330	425
YWY/YFY	4Cx400	61	2.6	0.7	4x0.8	3.15	2.84	2.84	73.0	78.0	17453	20254	0.0470	0.0592	436	372	490

4 CORE COPPER PVC UN-ARMOURED POWER CABLES IS:1554 (P-I) TABLE - 20

Type	No. of cores & cross sectional area (sqmm)	No. of wires	Thickness of PVC insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nom. Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance (Approx.) at 20°C Ohms/Km	Max. A.C. Resistance at 70°C Ohms/Km	Current Ratings		
										Direct in Ground Amps	In Duct Amps	In Air Amps
YY	4Cx1.5	1	0.80	0.30	1.80	11.70	225	12.10	14.50	21	18	17
YY	4Cx2.5	1	0.90	0.30	1.80	13.20	290	7.41	8.87	28	24	23
YY	4Cx4	1	1.00	0.30	1.80	15.00	446	4.61	5.52	37	31	30
YY	4Cx6	1	1.00	0.30	1.80	16.00	576	3.08	3.69	46	39	39
YY	4Cx10	7	1.00	0.30	1.80	19.00	773	1.83	2.19	61	51	53
YY	4Cx16	7	1.00	0.30	2.00	21.50	935	1.15	1.38	78	66	67
YY	4Cx25	7	1.20	0.30	2.00	23.00	1365	0.73	0.87	101	85	90
YY	4Cx35	7	1.20	0.30	2.00	25.00	1764	0.524	0.63	121	102	110
YY	4Cx50	7	1.40	0.40	2.20	29.00	2354	0.387	0.46	143	120	134
YY	4Cx70	19	1.40	0.40	2.20	34.00	3187	0.268	0.32	175	147	169
YY	4Cx95	19	1.60	0.40	2.40	37.50	4308	0.193	0.23	210	177	209
YY	4Cx120	19	1.60	0.50	2.40	41.50	5288	0.153	0.18	237	200	238
YY	4Cx150	19	1.80	0.50	2.60	45.50	6472	0.124	0.15	265	224	272
YY	4Cx185	37	2.00	0.60	2.80	50.00	8056	0.099	0.12	300	254	314
YY	4Cx240	37	2.20	0.60	3.00	57.00	10415	0.075	0.09	345	293	371
YY	4Cx300	37	2.40	0.70	3.40	63.20	13070	0.060	0.07	387	330	425
YY	4Cx400	61	2.60	0.70	3.60	70.00	16477	0.0470	0.05	436	372	490

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

INSUCON

ARMOURED PVC COPPER CONTROL CABLES IS : 1554 (Pt-1) TABLE - 21

No. of cores & cross sectional area No. x mm²	Nom. Thickness of PVC insulation (mm)	Min. Thickness of PVC inner sheath Extruded (mm)	STRIP ARMOURED CABLE				WIRE ARMOURED CABLE				Current Ratings	
			Strip Size (mm)	Min. Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Round Wire Dia (mm)	Min. Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Direct in Ground Amps	In Air / Duct. Amps
2 x 1.5	0.8	0.3	-	-	-	-	1.4	1.24	13.6	407	25	20/22
3 x 1.5	0.8	0.3	-	-	-	-	1.4	1.24	14.1	430	21	17/18
4 x 1.5	0.8	0.3	-	-	-	-	1.4	1.24	15.0	490	21	17/18
5 x 1.5	0.8	0.3	-	-	-	-	1.4	1.24	15.9	545	21	17/18
6 x 1.5	0.8	0.3	-	-	-	-	1.4	1.24	16.9	605	15	13
7 x 1.5	0.8	0.3	-	-	-	-	1.4	1.24	16.9	630	14	13
10 x 1.5	0.8	0.3	-	-	-	-	1.4	1.40	20.6	835	13	11
12 x 1.5	0.8	0.3	4 x 0.8	1.24	19.5	760	1.6	1.40	21.5	950	12	10
14 x 1.5	0.8	0.3	4 x 0.8	1.40	20.8	830	1.6	1.40	22.4	1040	11	10
16 x 1.5	0.8	0.3	4 x 0.8	1.40	21.7	920	1.6	1.40	23.3	1130	11	9
19 x 1.5	0.8	0.3	4 x 0.8	1.40	23.1	1040	1.6	1.40	24.7	1265	10	9
24 x 1.5	0.8	0.3	4 x 0.8	1.40	26.4	1250	1.6	1.40	28.0	1510	9	8
27 x 1.5	0.8	0.3	4 x 0.8	1.40	26.9	1355	1.6	1.40	28.5	1610	9	8
30 x 1.5	0.8	0.3	4 x 0.8	1.40	27.8	1430	1.6	1.40	29.4	1700	9	7
37 x 1.5	0.8	0.3	4 x 0.8	1.40	29.7	1670	1.6	1.40	31.3	1960	8	7
2 x 2.5	0.9	0.3	-	-	-	-	1.4	1.24	14.8	482	33	26/28
3 x 2.5	0.9	0.3	-	-	-	-	1.4	1.24	15.4	520	28	23/24
4 x 2.5	0.9	0.3	-	-	-	-	1.4	1.24	16.4	590	28	23/24
5 x 2.5	0.9	0.3	-	-	-	-	1.4	1.24	17.5	660	28	23/24
6 x 2.5	0.9	0.3	-	-	-	-	1.4	1.24	18.7	745	21	18
7 x 2.5	0.9	0.3	-	-	-	-	1.4	1.24	18.7	780	20	17
10 x 2.5	0.9	0.3	4 x 0.8	1.40	21.8	900	1.6	1.40	23.4	1110	18	15
12 x 2.5	0.9	0.3	4 x 0.8	1.40	22.8	1020	1.6	1.40	24.4	1240	17	14
14 x 2.5	0.9	0.3	4 x 0.8	1.40	23.8	1130	1.6	1.40	25.4	1340	16	13
16 x 2.5	0.9	0.3	4 x 0.8	1.40	24.9	1210	1.6	1.40	26.5	1455	15	13
19 x 2.5	0.9	0.3	4 x 0.8	1.40	26.1	1355	1.6	1.40	27.7	1605	14	12
24 x 2.5	0.9	0.3	4 x 0.8	1.40	30.0	1655	1.6	1.56	32.0	1970	13	11
27 x 2.5	0.9	0.3	4 x 0.8	1.40	30.6	1770	1.6	1.56	32.6	2100	12	10
30 x 2.5	0.9	0.4	4 x 0.8	1.56	32.0	1940	1.6	1.56	33.6	2250	12	10
37 x 2.5	0.9	0.4	4 x 0.8	1.56	34.7	2300	2.0	1.56	37.1	2900	11	9

Construction :

1. Solid / Stranded Annealed Copper Conductor & Tinned / Bare
2. General Purpose / HR PVC Insulation
3. Cores laid up (filled if needed)
4. FRLSH/General Purpose PVC Inner Sheath
5. Armouring Round Galvanised Steel Wire / Flat Strip
6. FRLSH/General Purpose PVC Outer Sheath

Max. D.C. Resistance at 20°C - Conductor size :

1.5 sq. mm - 12.1 Ohm / Km (Bare), 12.2 Ω / Km (Tinned)
2.5 sq. mm - 7.41 Ohm / Km (Bare), 7.56 Ω / Km (Tinned)

Max. A.C. Resistance at 70°C - Conductor size :

1.5 sq. mm - 14.50 Ohm / Km (Bare), 14.60 Ω / Km (Tinned)
2.5 sq. mm - 8.8 Ohm / Km (Bare), 8.99 Ω / Km (Tinned)

* DIMENSION Specified are with standard conductor.

Note : Figure quoted in this table are approximate for general information and are reference purpose only.

INSUCON

UN-ARMOURED PVC COPPER CONTROL CABLES IS : 1554 (Pt-1) TABLE - 22

No. of cores & cross sectional area	Nom. Thickness of PVC insulation	Min. Thickness of PVC inner sheath Extruded	Nom. Thickness of PVC outer sheath	Overall Diameter (Approx.)	Net Wt. of cable (Approx.)	Current Ratings	
						Direct in Ground	In Air / Duct.
No. x mm^2	(mm)	(mm)	(mm)	(mm)	(Kg/Km)	Amps	Amps
2 x 1.5	0.8	0.3	1.8	11.8	185	25	20/22
3 x 1.5	0.8	0.3	1.8	12.3	190	21	17/18
4 x 1.5	0.8	0.3	1.8	13.2	225	21	17/18
5 x 1.5	0.8	0.3	1.8	14.1	260	21	17/18
6 x 1.5	0.8	0.3	1.8	15.1	295	15	13
7 x 1.5	0.8	0.3	1.8	15.1	315	14	13
10 x 1.5	0.8	0.3	1.8	18.4	425	13	11
12 x 1.5	0.8	0.3	1.8	18.9	480	12	10
14 x 1.5	0.8	0.3	1.8	19.8	535	11	10
16 x 1.5	0.8	0.3	1.8	20.7	595	11	9
19 x 1.5	0.8	0.3	2.0	22.5	720	10	9
24 x 1.5	0.8	0.3	2.0	25.8	880	9	8
27 x 1.5	0.8	0.3	2.0	26.3	960	9	8
30 x 1.5	0.8	0.3	2.0	27.2	1040	9	7
37 x 1.5	0.8	0.3	2.0	29.1	1230	8	7
2 x 2.5	0.9	0.3	1.8	13.0	230	33	26/28
3 x 2.5	0.9	0.3	1.8	13.6	240	28	23/24
4 x 2.5	0.9	0.3	1.8	14.6	290	28	23/24
5 x 2.5	0.9	0.3	1.8	15.7	335	28	23/24
6 x 2.5	0.9	0.3	1.8	16.9	385	21	18
7 x 2.5	0.9	0.3	1.8	16.9	420	20	17
10 x 2.5	0.9	0.3	1.8	20.8	570	18	15
12 x 2.5	0.9	0.3	2.0	22.2	690	17	14
14 x 2.5	0.9	0.3	2.0	23.2	775	16	13
16 x 2.5	0.9	0.3	2.0	24.3	860	15	13
19 x 2.5	0.9	0.3	2.0	25.5	985	14	12
24 x 2.5	0.9	0.3	2.0	29.4	1215	13	11
27 x 2.5	0.9	0.3	2.0	30.0	1330	12	10
30 x 2.5	0.9	0.3	2.0	31.0	1450	12	10
37 x 2.5	0.9	0.4	2.2	34.1	1790	11	9

Construction :

1. Solid / Stranded Annealed Copper Conductor & Tinned / Bare
2. General Purpose / HR PVC Insulation
3. Cores laid up (filled if needed)
4. FRLSH / General Purpose PVC Inner Sheath
5. FRLSH / General Purpose PVC Outer Sheath

Max. D.C. Resistance at 20°C - Conductor size :

1.5 sq. mm - 12.1 Ohm / Km (Bare), 12.2 Ω / Km (Tinned)
2.5 sq. mm - 7.41 Ohm / Km (Bare), 7.56 Ω / Km (Tinned)

Max. A.C. Resistance at 70°C - Conductor size :

1.5 sq. mm - 14.50 Ohm / Km (Bare), 14.60 Ω / Km (Tinned)
2.5 sq. mm - 8.8 Ohm / Km (Bare), 8.99 Ω / Km (Tinned)

* DIMENSION Specified are with standard conductor.

Note : Figure quoted in this table are approximate for general information and are reference purpose only.

INSUCON

XLPE INSULATED HEAVY DUTY CABLES1.1 KV

Cross linked polyethylene (XLPE) is a thermosetting material obtained by forming cross linkages in polyethylene molecules. In the past two decades PVC had been the preferred material for insulating cables. It combined case of processing had good Electrical properties and was economical. However, it suffered from inherent disadvantages because of its thermoplastic nature. This restricted the maximum operating temperature of the conductor and ability to withstand thermal overloads. It also had higher dielectric loss which makes its use uneconomical in cables.

TECHNICAL ADVANTAGES

- Higher current rating
- Higher short circuit rating (approx. 1.2 times than PVC)
- Higher insulation resistance (1000 times more than PVC insulating cables)
- Higher resistance to moisture (1000 times more than PVC)
- Better resistance to surge currents
- Has better resistance to most chemicals, oils and acids etc.
- Low dielectric losses
- Better resistance to chemicals and corrosive gases etc.
- Comparatively higher cable operating temperature 90°C and short circuit temperature 250°C Smaller bending radius Longer service life

COMMERCIAL ADVANTAGES

- Lower laying cost because of comparatively smaller diameter of cable and lighter weight
- Require less size of cable trays / supports
- One size lower cable can be used as compared to PVC insulated cables

FRLSH XLPE CABLES

XLPE Cables can also be used with FRLS PVC sheathing to meet flame retardant low smoke properties.

IS: 7098

(Part-1)
CM/L 8407575

INSUCON

1 CORE ALUMINIUM XLPE ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 23

Type	No. of cores & cross sectional area (sqmm)	No. of wires	Thickness of XLPE Insulation Nom. (mm)	Nominal Dimensions of Armour Wire (mm)	Min. Thickness of PVC inner sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
										Direct in Ground	In Duct Amps	In Air Amps
A2XWaY	1Cx25	7	1.20	1.40	1.24	14	270	1.200	1.540	115	96	112
A2XWaY	1Cx35	7	1.20	1.40	1.24	15	320	0.868	1.110	137	115	137
A2XWaY	1Cx50	7	1.30	1.40	1.24	17	390	0.641	0.820	161	135	165
A2XWaY	1Cx70	19	1.40	1.40	1.24	19	490	0.443	0.567	198	165	209
A2XWaY	1Cx95	19	1.40	1.60	1.40	21	650	0.320	0.410	243	199	264
A2XWaY	1Cx120	19	1.50	1.60	1.40	23	760	0.253	0.325	276	226	308
A2XWaY	1Cx150	19	1.70	1.60	1.40	25	880	0.206	0.265	308	252	350
A2XWaY	1Cx185	37	1.90	1.60	1.40	27	1050	0.164	0.211	349	285	406
A2XWaY	1Cx240	37	2.00	1.60	1.40	29	1280	0.125	0.162	404	329	480
A2XWaY	1Cx300	37	2.10	1.60	1.56	32	1530	0.100	0.130	454	369	551
A2XWaY	1Cx400	61	2.40	2.00	1.56	37	2000	0.077	0.102	518	421	647
A2XWaY	1Cx500	61	2.60	2.00	1.56	40	2410	0.060	0.080	588	476	751
A2XWaY	1Cx630	61	2.80	2.00	1.72	45	2990	0.046	0.064	663	536	868
A2XWaY	1Cx800	61	3.10	2.00	1.88	50	3730	0.036	0.053	740	596	992
A2XWaY	1Cx1000	61	3.30	2.50	2.04	56	4730	0.029	0.044	812	652	1117

1 CORE ALUMINIUN XLPE UN-ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 24

Type	No. of cores & cross sectional area (sqmm)	No. of wires	Thickness of XLPE Insulation Nom. (mm)	Nominal Thickness of PVC Outer Sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
									Direct in Ground	In Duct Amps	In Air Amps
A2XY	1Cx25	7	0.90	1.8	12	190	1.200	1.540	115	96	112
A2XY	1Cx35	7	0.90	1.80	13	230	0.868	1.110	137	115	137
A2XY	1Cx50	7	1.00	1.80	15	280	0.641	0.820	161	135	165
A2XY	1Cx70	19	1.10	1.80	16	370	0.443	0.567	198	165	209
A2XY	1Cx95	19	1.10	1.80	18	460	0.320	0.410	243	199	264
A2XY	1Cx120	19	1.20	1.80	20	560	0.253	0.325	276	226	308
A2XY	1Cx150	19	1.40	2.00	22	690	0.206	0.265	308	252	350
A2XY	1Cx185	37	1.60	2.00	24	840	0.164	0.211	349	285	406
A2XY	1Cx240	37	1.70	2.00	27	1030	0.125	0.162	404	329	480
A2XY	1Cx300	37	1.80	2.00	29	1240	0.100	0.130	454	369	551
A2XY	1Cx400	61	2.00	2.20	33	1590	0.077	0.102	518	421	647
A2XY	1Cx500	61	2.20	2.20	36	1960	0.060	0.080	588	476	751
A2XY	1Cx630	61	2.40	2.20	41	2460	0.046	0.064	663	536	868
A2XY	1Cx800	61	2.60	2.40	46	3100	0.036	0.053	740	596	992
A2XY	1Cx1000	61	2.80	2.60	51	3850	0.029	0.044	812	652	1117

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

INSUCON

2 CORE ALUMINIUN XLPE ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 25

Type	No. of cores &cross sectional area (mm^2)	No. of wires	Thickness of XLPE insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Dimensions of Armour		Min. Thickness of PVC Outer Sheath		Overall Diameter (Approx)		Approx. Net Wt. of Cable		Max. D.C. Resistance at 200C Ohms/Km	Max. A.C. Resistance at 900C Ohms/Km	Current Ratings		
					Strip mm	Wire mm	Strip mm	Wire mm	Strip mm	Wire mm	Strip kg/km	Wire kg/km			Direct in Ground	In Duct Amps	In Air Amps
A2XWY	2Cx4	7	0.70	0.3	-	1.40	-	1.24	-	15.5	-	370	7.410	9.500	42	36	38
A2XWY	2Cx6	7	0.70	0.3	-	1.40	-	1.24	-	16.5	-	460	4.610	5.900	55	46	50
A2XWY	2Cx10	7	0.70	0.3	-	1.40	-	1.24	-	18.0	-	530	3.080	3.940	68	57	64
A2XWY/ A2XFY	2Cx16	7	0.70	0.3	-	1.40	-	1.40	-	17.0	-	550	1.910	2.440	89	74	83
A2XWY/ A2XFY	2Cx25	7	0.90	0.3	4x0.8	1.60	1.40	1.40	19.0	21.0	630	840	1.200	1.540	114	95	109
A2XWY/ A2XFY	2Cx35	7	0.90	0.3	4x0.8	1.60	1.40	1.40	21.0	22.0	740	970	0.868	1.110	136	113	133
A2XWY/ A2XFY	2Cx50	7	1.00	0.3	4x0.8	1.60	1.40	1.40	23.0	24.0	900	1150	0.641	0.820	161	134	162
A2XWY/ A2XFY	2Cx70	19	1.10	0.3	4x0.8	1.60	1.56	1.56	26.0	27.0	1140	1430	0.443	0.567	197	164	204
A2XWY/ A2XFY	2Cx95	19	1.10	0.4	4x0.8	2.00	1.56	1.56	28.0	31.0	1390	1900	0.320	0.410	235	196	251
A2XWY/ A2XFY	2Cx120	19	1.20	0.4	4x0.8	2.00	1.56	1.56	31.0	33.0	1660	2220	0.253	0.325	266	222	287
A2XWY/ A2XFY	2Cx150	19	1.40	0.4	4x0.8	2.00	1.72	1.72	34.0	36.0	1930	2550	0.206	0.265	296	248	328
A2XWY/ A2XFY	2Cx185	37	1.60	0.5	4x0.8	2.00	1.72	1.88	37.0	39.0	2320	3030	0.164	0.211	335	281	379
A2XWY/ A2XFY	2Cx240	37	1.70	0.5	4x0.8	2.50	1.88	2.04	41.0	45.0	2790	3930	0.125	0.162	385	324	448
A2XWY/ A2XFY	2Cx300	37	1.80	0.6	4x0.8	2.50	2.04	2.20	44.0	48.0	3390	4650	0.100	0.130	432	364	513
A2XWY/ A2XFY	2Cx400	61	2.00	0.6	4x0.8	2.50	2.36	2.36	50.0	54.0	4230	5600	0.077	0.102	487	412	593

2 CORE ALUMINIUN XLPE UN-ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 26

Type	No. of cores & cross sectional area (mm^2)	No. of wires	Thickness of XLPE Insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
										Direct in Ground	In Duct Amps	In Air Amps
A2XY	2Cx4	7	0.70	0.3	1.8	13.0	150	7.410	9.500	42	36	38
A2XY	2Cx6	7	0.70	0.3	1.8	14.0	180	4.610	5.900	55	46	50
A2XY	2Cx10	7	0.70	0.3	1.8	16.0	225	3.080	3.940	68	57	64
A2XY	2Cx16	7	0.70	0.3	1.8	15.0	280	1.910	2.440	89	74	83
A2XY	2Cx25	7	0.90	0.3	2.00	18.0	420	1.200	1.540	114	95	109
A2XY	2Cx35	7	0.90	0.3	2.00	20.0	510	0.868	1.110	136	113	133
A2XY	2Cx50	7	1.00	0.3	2.00	22.0	630	0.641	0.820	161	134	162
A2XY	2Cx70	19	1.10	0.3	2.00	25.0	800	0.443	0.567	197	164	204
A2XY	2Cx95	19	1.10	0.4	2.20	28.0	1040	0.320	0.410	235	196	251
A2XY	2Cx120	19	1.20	0.4	2.20	30.0	1260	0.253	0.325	266	222	287
A2XY	2Cx150	19	1.40	0.4	2.20	33.0	1480	0.206	0.265	296	248	328
A2XY	2Cx185	37	1.60	0.5	2.40	36.0	1840	0.164	0.211	335	281	379
A2XY	2Cx240	37	1.70	0.5	2.60	40.0	2250	0.125	0.162	385	324	448
A2XY	2Cx300	37	1.80	0.6	2.80	44.0	2810	0.100	0.130	432	364	513
A2XY	2Cx400	61	2.00	0.6	3.00	49.0	3530	0.077	0.102	487	412	593

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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3 CORE ALUMINIUN XLPE ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 27

Type	No. of cores &cross sectional area (mm^2)	No. of wires	Thickness of XLPE insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Dimensions of Armour		Min. Thickness of PVC Outer Sheath		Overall Diameter (Approx)		Approx. Net Wt. of Cable		Max. D.C. Resistance at 200C Ohms/Km	Max. A.C. Resistance at 900C Ohms/Km	Current Ratings		
					Strip mm	Wire mm	Strip mm	Wire mm	Strip mm	Wire mm	Strip kg/km	Wire kg/km			Direct in Ground	In Duct Amps	In Air Amps
A2XWY	3Cx4	7	0.70	0.3	-	1.40	-	1.24	-	16.0	-	400	7.410	9.500	35	30	32
A2XWY	3Cx6	7	0.70	0.3	-	1.40	-	1.24	-	17.0	-	460	4.610	5.900	46	38	42
A2XWY	3Cx10	7	0.70	0.3	-	1.40	-	1.24	-	19.0	-	540	3.080	3.940	57	48	54
A2XWY/ A2XFY	3Cx16	7	0.70	0.3	4x0.8	1.60	1.24	1.40	18.5	21.0	550	700	1.910	2.440	74	61	69
A2XWY/ A2XFY	3Cx25	7	0.90	0.3	4x0.8	1.60	1.40	1.40	21.3	23.0	770	980	1.200	1.540	95	79	93
A2XWY/ A2XFY	3Cx35	7	0.90	0.3	4x0.8	1.60	1.40	1.40	23.0	25.0	900	1160	0.868	1.110	114	94	114
A2XWY/ A2XFY	3Cx50	7	1.00	0.3	4x0.8	1.60	1.40	1.56	26.0	28.0	1000	1320	0.641	0.820	134	112	138
A2XWY/ A2XFY	3Cx70	19	1.10	0.4	4x0.8	2.00	1.56	1.56	30.0	32.0	1450	1950	0.443	0.567	164	137	175
A2XWY/ A2XFY	3Cx95	19	1.10	0.4	4x0.8	2.00	1.56	1.56	32.0	35.0	1750	2320	0.320	0.410	197	164	216
A2XWY/ A2XFY	3Cx120	19	1.20	0.4	4x0.8	2.00	1.56	1.72	36.0	39.0	2100	2770	0.253	0.325	223	187	249
A2XWY/ A2XFY	3Cx150	19	1.40	0.5	4x0.8	2.00	1.72	1.88	39.0	42.0	2520	3260	0.206	0.211	249	209	284
A2XWY/ A2XFY	3Cx185	37	1.60	0.5	4x0.8	2.50	1.88	2.04	44.0	47.0	3050	1220	0.164	0.125	282	238	329
A2XWY/ A2XFY	3Cx240	37	1.70	0.6	4x0.8	2.50	2.04	2.20	49.0	53.0	3770	5110	0.125	0.162	327	276	392
A2XWY/ A2XFY	3Cx300	37	1.80	0.6	4x0.8	2.50	2.20	2.36	54.0	58.0	4540	6030	0.100	0.130	369	312	452
A2XWY/ A2XFY	3Cx400	61	2.00	0.7	4x0.8	3.15	2.52	2.68	60.0	65.0	5640	8010	0.077	0.102	420	356	526

3 CORE ALUMINIUN XLPE UN-ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 28

Type	No. of cores & cross sectional area (mm^2)	No. of wires	Thickness of XLPE Insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
										Direct in Ground	In Duct Amps	In Air Amps
A2XY	3Cx4	7	0.70	0.3	1.8	15.5	200	7.410	9.500	35	30	32
A2XY	3Cx6	7	0.70	0.3	1.8	16.0	250	4.610	5.900	46	38	42
A2XY	3Cx10	7	0.70	0.3	1.8	18.0	310	3.080	3.940	57	48	54
A2XY	3Cx16	7	0.70	0.3	1.8	18.0	350	1.910	2.440	74	61	69
A2XY	3Cx25	7	0.90	0.3	2.00	21.0	520	1.200	1.540	95	79	93
A2XY	3Cx35	7	0.90	0.3	2.00	23.0	640	0.868	1.110	114	94	114
A2XY	3Cx50	7	1.00	0.3	2.00	25.0	700	0.641	0.820	134	112	138
A2XY	3Cx70	19	1.10	0.4	2.20	29.0	1080	0.443	0.567	164	137	175
A2XY	3Cx95	19	1.10	0.4	2.20	32.0	1350	0.320	0.410	197	164	216
A2XY	3Cx120	19	1.20	0.4	2.20	35.0	1640	0.253	0.325	223	187	249
A2XY	3Cx150	19	1.40	0.5	2.40	39.0	2020	0.206	0.265	249	209	284
A2XY	3Cx185	37	1.60	0.5	2.60	43.0	2490	0.164	0.211	282	238	329
A2XY	3Cx240	37	1.70	0.6	2.80	48.0	3150	0.125	0.162	327	276	392
A2XY	3Cx300	37	1.80	0.6	3.00	53.0	3890	0.100	0.130	369	312	452
A2XY	3Cx400	61	2.00	0.7	3.20	59.0	4840	0.077	0.102	420	356	526

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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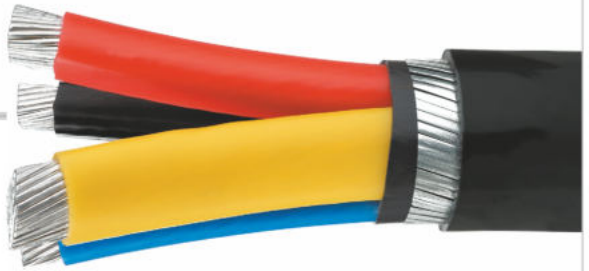
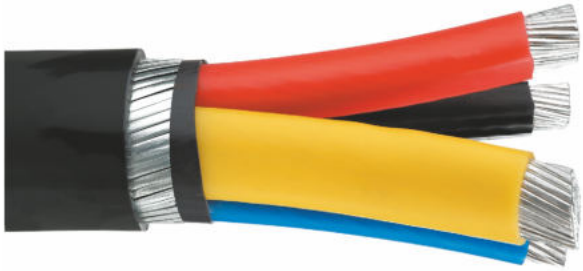


3.5 CORE ALUMINIUN XLPE ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 29

Type	No. of cores &cross sectional area (mm^2)	No. of wires	Thickness of XLPE insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Dimensions of Armour		Min. Thickness of PVC Outer Sheath		Overall Diameter (Approx)		Approx. Net Wt. of Cable		Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
					Strip mm	Wire mm	Strip mm	Wire mm	Strip mm	Wire mm	Strip kg/km	Wire kg/km			Direct in Ground	In Duct Amps	In Air Amps
A2XWY/2XFY	3.5CX25/16	7/7	0.9/0.7	0.3	4x0.8	1.60	1.40	1.40	23.0	25.0	870	1110	1.200	1.540	95	79	93
A2XWY/2XFY	3.5CX35/16	7/7	0.9/0.7	0.3	4x0.8	1.60	1.40	1.40	25.0	27.0	1030	1290	0.868	1.110	114	94	114
A2XWY/2XFY	3.5CX50/25	7/7	1.0/0.9	0.3	4x0.8	1.60	1.40	1.56	28.0	30.0	1230	1580	0.641	0.820	134	112	138
A2XWY/2XFY	3.5CX70/35	19/7	1.1/0.9	0.4	4x0.8	2.00	1.56	1.56	32.0	34.0	1610	2170	0.443	0.567	164	137	175
A2XWY/2XFY	3.5CX95/50	19/7	1.1/1.0	0.4	4x0.8	2.00	1.56	1.56	35.0	38.0	2000	2620	0.320	0.410	197	164	216
A2XWY/2XFY	3.5CX120/70	19/19	1.2/1.1	0.4	4x0.8	2.00	1.72	1.72	39.0	42.0	2460	3160	0.253	0.325	223	187	249
A2XWY/2XFY	3.5CX150/70	19/19	1.4/1.1	0.5	4x0.8	2.00	1.72	1.88	43.0	46.0	2840	3670	0.206	0.265	249	209	284
A2XWY/2XFY	3.5CX185/95	37/19	1.6/1.1	0.5	4x0.8	2.50	1.88	2.04	47.0	51.0	3480	4780	0.164	0.211	282	238	329
A2XWY/2XFY	3.5CX240/120	37/19	1.7/1.2	0.6	4x0.8	2.50	2.04	2.20	53.0	57.0	4290	5780	0.125	0.162	327	276	392
A2XWY/2XFY	3.5CX300/150	37/19	1.8/1.4	0.6	4x0.8	2.50	2.20	2.36	57.0	61.0	5170	6790	0.100	0.130	369	312	452
A2XWY/2XFY	3.5CX400/185	61/37	2.0/1.6	0.7	4x0.8	3.15	2.52	2.68	66.0	71.0	6480	9040	0.077	0.102	420	356	526



3.5 CORE ALUMINIUN XLPE UN-ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 30

Type	No. of cores & cross sectional area (mm^2)	No. of wires	Thickness of XLPE Insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
										Direct in Ground	In Duct Amps	In Air Amps
A2XY	3.5CX25/16	7/7	0.9/0.7	0.3	2.00	22.0	600	1.200	1.540	95	79	93
A2XY	3.5CX35/16	7/7	0.9/0.7	0.3	2.00	25.0	720	0.868	1.110	114	94	114
A2XY	3.5CX50/25	7/7	1.0/0.9	0.3	2.00	27.0	910	0.641	0.820	134	112	138
A2XY	3.5CX70/35	19/7	1.1/0.9	0.4	2.20	31.0	1230	0.443	0.567	164	137	175
A2XY	3.5CX95/50	19/7	1.1/1.0	0.4	2.20	35.0	1550	0.320	0.410	197	164	216
A2XY	3.5CX120/70	19/19	1.2/1.1	0.4	2.20	38.0	2050	0.253	0.325	223	187	249
A2XY	3.5CX150/70	19/19	1.4/1.1	0.5	2.40	42.0	2300	0.206	0.265	249	209	284
A2XY	3.5CX185/95	37/19	1.6/1.1	0.5	2.60	47.0	2860	0.164	0.211	282	238	329
A2XY	3.5CX240/120	37/19	1.7/1.2	0.6	2.80	52.0	3610	0.125	0.162	327	276	392
A2XY	3.5CX300/150	37/19	1.8/1.4	0.6	3.00	57.0	4410	0.100	0.130	369	312	452
A2XY	3.5CX400/185	61/37	2.0/1.6	0.7	3.40	66.0	5650	0.077	0.102	420	356	526

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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4 CORE ALUMINIUN XLPE ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 31

Type	No. of cores &cross sectional area (mm^2)	No. of wires	Thickness of XLPE insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Dimensions of Armour		Min. Thickness of PVC Outer Sheath		Overall Diameter (Approx)		Approx. Net Wt. of Cable		Max. D.C. Resistance at 200C Ohms/Km	Max. A.C. Resistance at 900C Ohms/Km	Current Ratings		
					Strip mm	Wire mm	Strip mm	Wire mm	Strip mm	Wire mm	Strip kg/km	Wire kg/km			Direct in Ground	In Duct Amps	In Air Amps
A2XWY	4Cx4	7	0.70	0.3	-	1.40	-	1.24	-	17.0	-	560	7.410	9.500	35	30	32
A2XWY	4Cx6	7	0.70	0.3	-	1.40	-	1.24	-	18.5	-	664	4.610	5.900	46	38	42
A2XWY	4Cx10	7	0.70	0.3	-	1.40	-	1.40	-	20.0	-	750	3.080	3.940	57	48	54
A2XWY/ A2XFY	4Cx16	7	0.70	0.3	4x0.8	1.60	1.40	1.40	21.0	22.0	700	950	1.910	2.450	74	61	69
A2XWY/ A2XFY	4Cx25	7	0.90	0.3	4x0.8	1.60	1.40	1.40	24.0	26.0	940	1180	1.200	1.540	95	79	93
A2XWY/ A2XFY	4Cx35	7	0.90	0.3	4x0.8	1.60	1.40	1.40	26.0	28.0	1130	1410	0.868	1.110	114	94	114
A2XWY/ A2XFY	4Cx50	7	1.00	0.3	4x0.8	1.60	1.56	1.56	30.0	31.0	1400	1720	0.641	0.820	134	112	138
A2XWY/ A2XFY	4Cx70	19	1.10	0.4	4x0.8	2.00	1.56	1.56	34.0	36.0	1800	2410	0.443	0.567	164	137	175
A2XWY/ A2XFY	4Cx95	19	1.10	0.4	4x0.8	2.00	1.56	1.72	37.0	40.0	2190	2900	0.320	0.410	197	164	216
A2XWY/ A2XFY	4Cx120	19	1.20	0.5	4x0.8	2.00	1.72	1.88	42.0	44.0	2690	3480	0.253	0.325	223	187	249
A2XWY/ A2XFY	4Cx150	19	1.40	0.5	4x0.8	2.50	1.88	2.04	46.0	50.0	3220	4480	0.206	0.265	249	209	284
A2XWY/ A2XFY	4Cx185	37	1.60	0.5	4x0.8	2.50	2.04	2.20	51.0	55.0	3920	5330	0.164	0.211	282	238	329
A2XWY/ A2XFY	4Cx240	37	1.70	0.6	4x0.8	2.50	2.20	2.36	57.0	61.0	4850	6420	0.125	0.162	327	276	392
A2XWY/ A2XFY	4Cx300	37	1.80	0.7	4x0.8	3.15	2.36	2.52	63.0	68.0	5900	8360	0.100	0.130	369	312	452
A2XWY/ A2XFY	4Cx400	61	2.00	0.7	4x0.8	3.15	2.68	2.84	71.0	76.0	7310	10070	0.077	0.102	420	356	526

4 CORE ALUMINIUN XLPE UMARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 32

Type	No. of cores & cross sectional area (mm^2)	No. of wires	Thickness of XLPE Insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
										Direct in Ground	In Duct Amps	In Air Amps
A2XY	4Cx4	7	0.70	0.3	1.8	16.0	230	7.410	9.500	35	30	32
A2XY	4Cx6	7	0.70	0.3	1.8	17.50	270	4.610	5.900	46	38	42
A2XY	4Cx10	7	0.70	0.3	1.8	18.50	340	3.080	3.940	57	48	54
A2XY	4Cx16	7	0.70	0.3	1.80	\20.0	445	1.910	2.450	74	61	69
A2XY	4Cx25	7	0.90	0.3	2.00	23.0	650	1.200	1.540	95	79	93
A2XY	4Cx35	7	0.90	0.3	2.00	26.0	800	0.868	1.110	114	94	114
A2XY	4Cx50	7	1.00	0.3	2.00	29.0	1000	0.641	0.820	134	112	138
A2XY	4Cx70	19	1.10	0.4	2.20	33.0	1370	0.443	0.567	164	137	175
A2XY	4Cx95	19	1.10	0.4	2.20	36.0	1740	0.320	0.410	197	164	216
A2XY	4Cx120	19	1.20	0.5	2.40	41.0	2170	0.253	0.325	223	187	249
A2XY	4Cx150	19	1.40	0.5	2.60	45.0	2630	0.206	0.265	249	209	284
A2XY	4Cx185	37	1.60	0.5	2.80	50.0	3250	0.164	0.211	282	238	329
A2XY	4Cx240	37	1.70	0.6	3.00	56.0	4110	0.125	0.162	327	276	392
A2XY	4Cx300	37	1.80	0.7	3.20	63.0	5070	0.100	0.130	369	312	452
A2XY	4Cx400	61	2.00	0.7	3.60	71.0	6420	0.077	0.102	420	356	526

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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1 CORE COPPER XLPE ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 33

Type	No. of cores & cross sectional area (sqmm)	No. of wires	Thickness of XLPE Insulation Nom. (mm)	Nominal Dimensions of Armour Wire (mm)	Min. Thickness of PVC inner sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
										Direct in Ground	In Duct Amps	In Air Amps
2XWaY	1Cx25	7	1.20	1.40	1.24	14	395	0.727	0.930	148	124	144
2XWaY	1Cx35	7	1.20	1.40	1.24	15	500	0.524	0.671	177	148	176
2XWaY	1Cx50	7	1.30	1.40	1.24	17	634	0.387	0.495	208	174	212
2XWaY	1Cx70	19	1.40	1.40	1.24	19	846	0.268	0.343	255	213	269
2XWaY	1Cx95	19	1.40	1.60	1.40	21	1139	0.193	0.247	312	256	340
2XWaY	1Cx120	19	1.50	1.60	1.40	23	1390	0.153	0.196	355	291	396
2XWaY	1Cx150	19	1.70	1.60	1.40	25	1667	0.124	0.159	396	324	450
2XWaY	1Cx185	37	1.90	1.60	1.40	27	2039	0.0991	0.127	447	365	519
2XWaY	1Cx240	37	2.00	1.60	1.40	29	2584	0.0754	0.0965	515	420	613
2XWaY	1Cx300	37	2.10	1.60	1.56	32	3184	0.0601	0.0769	576	469	700
2XWaY	1Cx400	61	2.40	2.00	1.56	37	4099	0.0470	0.0602	651	528	813
2XWaY	1Cx500	61	2.60	2.00	1.56	40	5118	0.0366	0.0468	727	589	930
2XWaY	1Cx630	61	2.80	2.00	1.72	45	6511	0.0283	0.0362	806	651	1056
2XWaY	1Cx800	61	3.10	2.00	1.88	50	8250	0.0221	0.0283	877	707	1179
2XWaY	1Cx1000	61	3.30	2.50	2.04	56	10386	0.0176	0.0225	935	751	1288

1 CORE COPPER XLPE UN-ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 34

Type	No. of cores & cross sectional area (sqmm)	No. of wires	Thickness of XLPE Insulation Nom. (mm)	Nominal Thickness of PVC Outer Sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
									Direct in Ground	In Duct Amps	In Air Amps
2XY	1Cx25	7	0.90	1.8	12	315	0.727	0.930	123	103	109
2XY	1Cx35	7	0.90	1.8	13	409	0.524	0.671	147	123	133
2XY	1Cx50	7	1.00	1.8	15	532	0.387	0.495	173	145	160
2XY	1Cx70	19	1.10	1.80	16	731	0.268	0.343	213	178	202
2XY	1Cx95	19	1.10	1.80	18	973	0.193	0.247	259	213	254
2XY	1Cx120	19	1.20	1.80	20	1207	0.153	0.196	295	242	295
2XY	1Cx150	19	1.40	2.00	22	1491	0.124	0.159	329	269	335
2XY	1Cx185	37	1.60	2.00	24	1838	0.0991	0.127	371	303	386
2XY	1Cx240	37	1.70	2.00	27	2356	0.0754	0.0965	427	348	454
2XY	1Cx300	37	1.80	2.00	29	2916	0.0601	0.0769	477	389	518
2XY	1Cx400	61	2.00	2.2	33	3720	0.0470	0.0602	538	437	600
2XY	1Cx500	61	2.20	2.2	36	4708	0.0366	0.0468	600	486	684
2XY	1Cx630	61	2.40	2.2	41	6022	0.0283	0.0362	662	535	773
2XY	1Cx800	61	2.60	2.4	46	7676	0.0221	0.0283	718	579	859
2XY	1Cx1000	61	2.80	2.6	51	9587	0.0176	0.0225	763	613	935

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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2 CORE COPPER XLPE ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 35

Type	No. of cores &cross sectional area (mm^2)	No. of wires	Thickness of XLPE insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Dimensions of Armour		Min. Thickness of PVC Outer Sheath		Overall Diameter (Approx)		Approx. Net Wt. of Cable		Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
					Strip mm	Wire mm	Strip mm	Wire mm	Strip mm	Wire mm	Strip kg/km	Wire kg/km			Direct in Ground	In Duct Amps	In Air Amps
2XWY	2Cx4	7	0.70	0.3	-	1.40	-	1.24	-	15.5	-	525	4.61	5.90	54	45	48
2XWY	2Cx6	7	0.70	0.3	-	1.40	-	1.24	-	16.5	-	610	3.08	3.94	67	56	61
2XWY	2Cx10	7	0.70	0.3	-	1.40	-	1.24	-	18.0	-	740	1.83	2.19	89	75	83
2XWY/2XFY	2Cx16	7	0.70	0.3	-	1.40	-	1.40	-	17.0	-	770	1.15	1.47	115	96	108
2XWY/2XFY	2Cx25	7	0.90	0.3	4x0.8	1.60	1.40	1.40	19.0	21.0	872	1059	727	0.930	147	122	140
2XWY/2XFY	2Cx35	7	0.90	0.3	4x0.8	1.60	1.40	1.40	21.0	22.0	1087	1299	0.524	0.671	176	146	172
2XWY/2XFY	2Cx50	7	1.00	0.3	4x0.8	1.60	1.40	1.40	23.0	24.0	1379	1607	0.387	0.495	208	173	208
2XWY/2XFY	2Cx70	19	1.10	0.3	4x0.8	1.60	1.56	1.56	26.0	27.0	1845	2106	0.268	0.343	253	211	262
2XWY/2XFY	2Cx95	19	1.10	0.4	4x0.8	2.00	1.56	1.56	28.0	31.0	2388	2847	0.193	0.247	302	252	322
2XWY/2XFY	2Cx120	19	1.20	0.4	4x0.8	2.00	1.56	1.56	31.0	33.0	2918	3429	0.153	0.196	340	284	368
2XWY/2XFY	2Cx150	19	1.40	0.4	4x0.8	2.00	1.72	1.72	34.0	36.0	3500	4062	0.124	0.159	379	317	419
2XWY/2XFY	2Cx185	37	1.60	0.5	4x0.8	2.00	1.72	1.88	37.0	39.0	4295	4936	0.0991	0.127	425	357	482
2XWY/2XFY	2Cx240	37	1.70	0.5	4x0.8	2.50	1.88	2.04	41.0	45.0	5449	6487	0.0754	0.0965	486	409	566
2XWY/2XFY	2Cx300	37	1.80	0.6	4x0.8	2.50	2.04	2.20	44.0	48.0	6678	7831	0.0601	0.0769	541	456	644
2XWY/2XFY	2Cx400	61	2.00	0.6	4x0.8	2.50	2.36	2.36	50.0	54.0	8437	9688	0.0470	0.0602	602	508	734

2 CORE COPPER XLPE UN-ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 36

Type	No. of cores & cross sectional area (mm^2)	No. of wires	Thickness of XLPE Insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
										Direct in Ground	In Duct Amps	In Air Amps
2XY	2Cx4	7	0.70	0.3	1.8	13.0	175	4.61	5.90	54	45	48
2XY	2Cx6	7	0.70	0.3	1.8	14.0	225	3.08	3.94	67	56	61
2XY	2Cx10	7	0.70	0.3	1.8	16.0	330	1.83	2.19	89	75	83
2XY	2Cx16	7	0.70	0.3	1.8	15.0	420	1.15	1.47	115	96	108
2XY	2Cx25	7	0.90	0.3	2.00	18.0	672	0.727	0.930	147	122	140
2XY	2Cx35	7	0.90	0.3	2.00	20.0	865	0.524	0.671	176	146	172
2XY	2Cx50	7	1.00	0.3	2.00	22.0	1114	0.387	0.495	208	173	208
2XY	2Cx70	19	1.10	0.3	2.00	25.00	1519	0.268	0.343	253	211	262
2XY	2Cx95	19	1.10	0.4	2.20	28.0	2048	0.193	0.247	302	252	322
2XY	2Cx120	19	1.20	0.4	2.20	30.0	2526	0.153	0.196	340	284	368
2XY	2Cx150	19	1.40	0.4	2.20	33.0	3062	0.124	0.159	379	317	419
2XY	2Cx185	37	1.60	0.5	2.40	36.0	3813	0.0991	0.127	425	357	482
2XY	2Cx240	37	1.70	0.5	2.60	40.0	4917	0.0754	0.0965	486	409	566
2XY	2Cx300	37	1.80	0.6	2.80	44.0	6107	0.0601	0.0769	541	456	644
2XY	2Cx400	61	2.00	0.6	3.00	49.0	7732	0.0470	0.0602	602	508	734

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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3 CORE COPPER XLPE ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 37

Type	No. of cores &cross sectional area (mm^2)	No. of wires	Thickness of XLPE insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Dimensions of Armour		Min. Thickness of PVC Outer Sheath		Overall Diameter (Approx)		Approx. Net Wt. of Cable		Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
					Strip mm	Wire mm	Strip mm	Wire mm	Strip mm	Wire mm	Strip kg/km	Wire kg/km			Direct in Ground	In Duct Amps	In Air Amps
2XWY	3Cx4	7	0.70	0.3	-	1.4	-	1.24	-	16.0	-	580	4.61	5.90	45	38	41
2XWY	3Cx6	7	0.70	0.3	-	1.4	-	1.24	-	17.0	-	680	3.08	3.94	56	47	52
2XWY	3Cx10	7	0.70	0.3	-	1.4	-	1.24	-	19.0	-	865	1.83	2.19	74	62	70
2XWY/2XFY	3Cx16	7	0.70	0.3	4x0.8	1.6	1.24	1.40	18.5	21.0	825	1040	1.15	1.47	95	79	89
2XWY/2XFY	3Cx25	7	0.90	0.3	4x0.8	1.60	1.40	1.40	21.3	23.0	1177	1373	0.727	0.930	122	102	119
2XWY/2XFY	3Cx35	7	0.90	0.3	4x0.8	1.60	1.40	1.40	23.0	25.0	1469	1713	0.524	0.671	146	122	147
2XWY/2XFY	3Cx50	7	1.00	0.3	4x0.8	1.60	1.40	1.56	26.0	28.0	1872	2117	0.387	0.495	173	144	179
2XWY/2XFY	3Cx70	19	1.10	0.4	4x0.8	2.00	1.56	1.56	30.0	32.0	2570	3052	0.268	0.343	212	177	226
2XWY/2XFY	3Cx95	19	1.10	0.4	4x0.8	2.00	1.56	1.56	32.0	35.0	3333	3868	0.193	0.247	254	212	279
2XWY/2XFY	3Cx120	19	1.20	0.4	4x0.8	2.00	1.56	1.72	36.0	39.0	4085	4725	0.153	0.196	287	240	320
2XWY/2XFY	3Cx150	19	1.40	0.5	4x0.8	2.00	1.72	1.88	39.0	42.0	4988	5691	0.124	0.159	321	269	365
2XWY/2XFY	3Cx185	37	1.60	0.5	4x0.8	2.50	1.88	2.04	44.0	47.0	6137	7245	0.0991	0.127	362	304	422
2XWY/2XFY	3Cx240	37	1.70	0.6	4x0.8	2.50	2.04	2.20	49.0	53.0	7838	9112	0.0754	0.0965	418	352	500
2XWY/2XFY	3Cx300	37	1.80	0.6	4x0.8	2.50	2.20	2.36	54.0	58.0	9667	11087	0.0601	0.0769	469	396	574
2XWY/2XFY	3Cx400	61	2.00	0.7	4x0.8	3.15	2.52	2.68	60.0	65.0	12190	14437	0.0470	0.0602	528	447	662

3 CORE COPPER XLPE UN-ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 38

Type	No. of cores & cross sectional area (mm^2)	No. of wires	Thickness of XLPE Insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
										Direct in Ground	In Duct Amps	In Air Amps
2XY	3Cx4	7	0.70	0.3	1.8	15.0	235	4.61	5.90	45	38	41
2XY	3Cx6	7	0.70	0.3	1.8	16.0	300	3.08	3.94	56	47	52
2XY	3Cx10	7	0.70	0.3	1.8	18.0	415	1.83	2.19	74	62	70
2XY	3Cx16	7	0.70	0.3	1.8	18.0	425	1.15	1.47	95	79	89
2XY	3Cx25	7	0.90	0.3	2.00	21.0	935	0.727	0.930	122	102	119
2XY	3Cx35	7	0.90	0.3	2.00	23.0	1219	0.524	0.671	146	122	147
2XY	3Cx50	7	1.00	0.3	2.00	25.0	1578	0.387	0.495	173	144	179
2XY	3Cx70	19	1.10	0.4	2.20	29.0	2222	0.268	0.343	212	177	226
2XY	3Cx95	19	1.10	0.4	2.20	32.0	2948	0.193	0.247	254	212	279
2XY	3Cx120	19	1.20	0.4	2.20	35.0	3659	0.153	0.196	287	240	320
2XY	3Cx150	19	1.40	0.5	2.40	39.0	4511	0.124	0.159	321	269	365
2XY	3Cx185	37	1.60	0.5	2.60	43.0	5600	0.0991	0.127	362	304	422
2XY	3Cx240	37	1.70	0.6	2.80	48.0	7249	0.0754	0.0965	418	352	500
2XY	3Cx300	37	1.80	0.6	3.00	53.0	9001	0.0601	0.0769	469	396	574
2XY	3Cx400	61	2.00	0.7	3.20	59.0	11429	0.0470	0.0602	528	447	662

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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3.5 CORE COPPER XLPE ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 39

Type	No. of cores &cross sectional area (mm^2)	No. of wires	Thickness of XLPE insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Dimensions of Armour		Min. Thickness of PVC Outer Sheath		Overall Diameter (Approx)		Approx. Net Wt. of Cable		Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
					Strip mm	Wire mm	Strip mm	Wire mm	Strip mm	Wire mm	Strip kg/km	Wire kg/km			Direct in Ground	In Duct Amps	In Air Amps
2XWY/2XFY	3.5CX25/16	7/7	0.9/0.7	0.3	4x0.8	1.60	1.40	1.40	23.0	25.0	1354	1583	0.727	0.930	122	102	119
2XWY/2XFY	3.5CX35/16	7/7	0.9/0.7	0.3	4x0.8	1.60	1.40	1.40	25.0	27.0	1680	1925	0.524	0.671	146	122	147
2XWY/2XFY	3.5CX50/25	7/7	1.0/0.9	0.3	4x0.8	1.60	1.40	1.56	28.0	30.0	2143	2468	0.387	0.495	173	144	179
2XWY/2XFY	3.5CX70/35	19/7	1.1/0.9	0.4	4x0.8	2.00	1.56	1.56	32.0	34.0	2931	3465	0.268	0.343	212	177	226
2XWY/2XFY	3.5CX95/50	19/7	1.1/1.0	0.4	4x0.8	2.00	1.56	1.56	35.0	38.0	3831	4426	0.193	0.247	254	212	279
2XWY/2XFY	3.5CX120/70	19/19	1.2/1.1	0.4	4x0.8	2.00	1.72	1.72	39.0	42.0	4831	5498	0.153	0.196	287	240	320
2XWY/2XFY	3.5CX150/70	19/19	1.4/1.1	0.5	4x0.8	2.00	1.72	1.88	43.0	46.0	5691	6473	0.124	0.159	321	269	365
2XWY/2XFY	3.5CX185/95	37/19	1.6/1.1	0.5	4x0.8	2.50	1.88	2.04	47.0	51.0	7100	8333	0.0991	0.127	362	304	422
2XWY/2XFY	3.5CX240/120	37/19	1.7/1.2	0.6	4x0.8	2.50	2.04	2.20	53.0	57.0	9035	10435	0.0754	0.0965	418	352	500
2XWY/2XFY	3.5CX300/150	37/19	1.8/1.4	0.6	4x0.8	2.50	2.20	2.36	57.0	61.0	11126	12671	0.0601	0.0769	469	396	574
2XWY/2XFY	3.5CX400/185	61/37	2.0/1.6	0.7	4x0.8	3.15	2.52	2.68	66.0	71.0	14059	16498	0.0470	0.0602	528	447	662

3.5 CORE COPPER XLPE UN-ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 40

Type	No. of cores & cross sectional area (mm^2)	No. of wires	Thickness of XLPE Insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
										Direct in Ground	In Duct Amps	In Air Amps
2XY	3.5CX25/16	7/7	0.9/0.7	0.3	2.00	22.0	1102	0.727	0.930	122	102	119
2XY	3.5CX35/16	7/7	0.9/0.7	0.3	2.00	25.0	1389	0.524	0.671	146	122	147
2XY	3.5CX50/25	7/7	1.0/0.9	0.3	2.00	27.0	1836	0.387	0.495	173	144	179
2XY	3.5CX70/35	19/7	1.1/0.9	0.4	2.20	31.0	2567	0.268	0.343	212	177	226
2XY	3.5CX95/50	19/7	1.1/1.0	0.4	2.20	35.0	3416	0.193	0.247	254	212	279
2XY	3.5CX120/70	19/19	1.2/1.1	0.4	2.20	38.0	4317	0.153	0.196	287	240	320
2XY	3.5CX150/70	19/19	1.4/1.1	0.5	2.40	42.0	5178	0.124	0.159	321	269	365
2XY	3.5CX185/95	37/19	1.6/1.1	0.5	2.60	47.0	6508	0.0991	0.127	362	304	422
2XY	3.5CX240/120	37/19	1.7/1.2	0.6	2.80	52.0	8389	0.0754	0.0965	418	352	500
2XY	3.5CX300/150	37/19	1.8/1.4	0.6	3.00	57.0	10401	0.0601	0.0769	469	396	574
2XY	3.5CX400/185	61/37	2.0/1.6	0.7	3.40	66.0	13271	0.0470	0.0602	528	447	662

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

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4 CORE COPPER XLPE ARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 41

Type	No. of cores &cross sectional area (mm^2)	No. of wires	Thickness of XLPE insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Dimensions of Armour		Min. Thickness of PVC Outer Sheath		Overall Diameter (Approx)		Approx. Net Wt. of Cable		Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
					Strip mm	Wire mm	Strip mm	Wire mm	Strip mm	Wire mm	Strip kg/km	Wire kg/km			Direct in Ground	In Duct Amps	In Air Amps
2XWY	4Cx4	7	0.70	0.3	-	1.40	-	1.24	-	17.5	-	660	4.61	5.90	45	38	41
2XWY	4Cx6	7	0.70	0.3	-	1.40	-	1.24	-	18.5	-	775	3.08	3.94	56	47	52
2XWY	4Cx10	7	0.70	0.3	-	1.40	-	1.40	-	20.5	-	1010	1.83	2.19	74	62	70
2XWY/2XFY	4Cx16	7	0.70	0.3	4x0.8	1.60	1.40	1.40	21.0	22.0	998	1210	1.15	1.47	95	79	89
2XWY/2XFY	4Cx25	7	0.90	0.3	4x0.8	1.60	1.40	1.40	24.0	26.0	1473	1709	0.727	0.930	122	102	119
2XWY/2XFY	4Cx35	7	0.90	0.3	4x0.8	1.60	1.40	1.40	26.0	28.0	1886	2154	0.524	0.671	146	122	147
2XWY/2XFY	4Cx50	7	1.00	0.3	4x0.8	1.60	1.56	1.56	30.0	31.0	2431	2732	0.387	0.495	173	144	179
2XWY/2XFY	4Cx70	19	1.10	0.4	4x0.8	2.00	1.56	1.56	34.0	36.0	3301	3887	0.268	0.343	212	177	226
2XWY/2XFY	4Cx95	19	1.10	0.4	4x0.8	2.00	1.56	1.72	37.0	40.0	4299	4970	0.193	0.247	254	212	279
2XWY/2XFY	4Cx120	19	1.20	0.5	4x0.8	2.00	1.72	1.88	42.0	44.0	5827	6583	0.153	0.196	287	240	320
2XWY/2XFY	4Cx150	19	1.40	0.5	4x0.8	2.50	1.88	2.04	46.0	50.0	6500	7702	0.124	0.159	321	269	365
2XWY/2XFY	4Cx185	37	1.60	0.5	4x0.8	2.50	2.04	2.20	51.0	55.0	8031	9377	0.0991	0.127	362	304	422
2XWY/2XFY	4Cx240	37	1.70	0.6	4x0.8	2.50	2.20	2.36	57.0	61.0	10286	11776	0.0754	0.0965	418	352	500
2XWY/2XFY	4Cx300	37	1.80	0.7	4x0.8	3.15	2.36	2.52	63.0	68.0	11988	15072	0.0601	0.0769	469	396	574
2XWY/2XFY	4Cx400	61	2.00	0.7	4x0.8	3.15	2.68	2.84	71.0	76.0	15872	18669	0.0470	0.0602	528	447	662

4 CORE COPPER XLPE UMARMOURED POWER CABLES IS: 7098 (P-I) TABLE - 42

Type	No. of cores & cross sectional area (mm^2)	No. of wires	Thickness of XLPE Insulation Nom. (mm)	Min. Thickness of PVC inner sheath (mm)	Nominal Thickness of PVC outer sheath (mm)	Overall Diameter (Approx.) (mm)	Net Wt. of cable (Approx.) (Kg/Km)	Max. D.C. Resistance at 20°C Ohms/Km	Max. A.C. Resistance at 90°C Ohms/Km	Current Ratings		
										Direct in Ground	In Duct Amps	In Air Amps
2XY	4Cx4	7	0.70	0.3	1.8	16.0	280	4.61	5.90	45	38	41
2XY	4Cx6	7	0.70	0.3	1.8	17.50	365	3.08	3.94	56	47	52
2XY	4Cx10	7	0.70	0.3	1.8	18.50	510	1.83	2.19	74	62	70
2XY	4Cx16	7	0.70	0.3	1.8	17/50	750	1.15	1.47	95	79	89
2XY	4Cx16	7	0.70	0.3	1.80	20.0	713	1.15	1.47	122	102	119
2XY	4Cx25	7	0.90	0.3	2.00	23.0	1193	0.727	0.930	146	122	147
2XY	4Cx35	7	0.90	0.3	2.00	26.0	1566	0.524	0.671	173	144	179
2XY	4Cx50	7	1.00	0.3	2.00	29.0	2057	0.387	0.495	212	177	226
2XY	4Cx70	19	1.10	0.4	2.20	33.0	2898	0.268	0.343	254	212	279
2XY	4Cx95	19	1.10	0.4	2.20	36.0	3858	0.193	0.247	287	240	320
2XY	4Cx120	19	1.20	0.5	2.40	41.0	5324	0.153	0.196	321	269	365
2XY	4Cx150	19	1.40	0.5	2.60	45.0	5947	0.124	0.159	362	304	422
2XY	4Cx185	37	1.60	0.5	2.80	50.0	7400	0.0991	0.127	418	352	500
2XY	4Cx240	37	1.70	0.6	3.00	56.0	9584	0.0754	0.0965	469	396	574
2XY	4Cx300	37	1.80	0.7	3.20	63.0	11948	0.0601	0.0769	528	447	662
2XY	4Cx400	61	2.00	0.7	3.60	71.0	15207	0.0470	0.0602			

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

INSUCON

1.5 SQ.MM COPPER CONDUCTOR XLPE ARMOURED/UN-ARMOURED PVC OUTER SHEATHED CONTROL CABLES IS:7098 (PT-1) TABLE - 43

Number of Cores	Nominal thickness of insulation (mm)	Minimum thickness of inner sheath (mm)	UN-ARMOURED CABLES 2XY			ARMOURED CABLES								Current Ratings	
						Single Layer-Wire (2XWY)				Single Layer-Strip (2XFY)					
			Nominal thickness of outer sheath (mm)	Approx overall diameter of cable (mm)	Approx weight of cable (kg/km)	Nominal diameter of armour wire (mm)	Minimum thickness of outer sheath (mm)	Approx. overall diameter of cable (mm)	Approx. weight of cable (kg/km)	Nominal thickness of armour strip (mm)	Minimum thickness of outer sheath (mm)	Approx. overall diameter of cable (mm)	Approx. weight of cable (kg/km)	Direct in Ground at 30°C	In Air / Duct at 40°C
2	0.7	0.3	1.8	11.0	160	1.4	1.24	13.5	350	-	-	-	-	31	27
3	0.7	0.3	1.8	11.5	180	1.4	1.24	14.0	410	-	-	-	-	26	23
4	0.7	0.3	1.8	12.5	210	1.4	1.24	15.0	470	-	-	-	-	26	23
5	0.7	0.3	1.8	13.0	240	1.4	1.24	15.5	500	-	-	-	-	26	23
6	0.7	0.3	1.8	14.0	270	1.4	1.24	16.5	580	-	-	-	-	23	20
7	0.7	0.3	1.8	14.0	290	1.4	1.24	16.5	600	-	-	-	-	20	18
8	0.7	0.3	1.8	15.0	300	1.4	1.24	17.0	630	-	-	-	-	17	15
9	0.7	0.3	1.8	16.0	340	1.4	1.24	18.5	700	-	-	-	-	17	15
10	0.7	0.3	1.8	17.0	360	1.4	1.24	19.5	740	-	-	-	-	17	15
12	0.7	0.3	1.8	17.5	410	1.4	1.24	20.0	800	-	-	-	-	16	14
14	0.7	0.3	1.8	18.5	460	1.4	1.40	21.0	900	-	-	-	-	16	14
16	0.7	0.3	1.8	19.0	510	1.6	1.40	22.5	1050	0.8	1.40	21.0	840	14	12
19	0.7	0.3	1.8	20.0	580	1.6	1.40	23.0	1150	0.8	1.40	21.5	920	14	12
24	0.7	0.3	2.0	21.5	720	1.6	1.40	26.0	1400	0.8	1.40	24.0	1100	12	11
27	0.7	0.3	2.0	24.0	800	1.6	1.40	26.0	1500	0.8	1.40	25.0	1200	11	9
30	0.7	0.3	2.0	24.5	850	1.6	1.40	27.0	1550	0.8	1.40	25.5	1280	11	9
37	0.7	0.3	2.0	26.0	1020	1.6	1.40	28.5	1750	0.8	1.40	27.0	1500	11	9
44	0.7	0.3	2.0	29.0	1200	1.6	1.56	32.0	2050	0.8	1.40	30.5	1700	9	8
52	0.7	0.3	2.0	30.0	1350	1.6	1.56	33.0	2250	0.8	1.56	31.5	1900	9	8
61	0.7	0.4	2.2	32.5	1580	2.0	1.56	36.5	2800	0.8	1.56	34.0	2150	9	8

2.5 SQ.MM COPPER CONDUCTOR, XLPE, ARMOURED / UN-ARMOURED, PVC OUTER SHEATHED CONTROL CABLES IS:7098 (PT-1) TABLE - 44

Number of Cores	Nominal thickness of insulation (mm)	Minimum thickness of inner sheath (mm)	UN-ARMOURED CABLES 2XY			ARMOURED CABLES								Current Ratings	
						Single Layer-Wire (2XWY)				Single Layer-Strip (2XFY)					
			Nominal thickness of outer sheath (mm)	Approx overall diameter of cable (mm)	Approx weight of cable (kg/km)	Nominal diameter of armour wire (mm)	Minimum thickness of outer sheath (mm)	Approx. overall diameter of cable (mm)	Approx. weight of cable (kg/km)	Nominal diameter of armour strip (mm)	Minimum thickness of outer sheath (mm)	Approx. overall diameter of cable (mm)	Approx. weight of cable (kg/km)	Direct in Ground at 30°C	In Air / Duct at 40°C
2	0.7	0.3	1.8	12.0	190	1.4	1.24	14.5	430	-	-	-	-	41	36
3	0.7	0.3	1.8	14.0	230	1.4	1.24	15.0	490	-	-	-	-	34	30
4	0.7	0.3	1.8	15.0	250	1.4	1.24	16.0	520	-	-	-	-	34	30
5	0.7	0.3	1.8	16.0	300	1.4	1.24	17.0	600	-	-	-	-	34	30
6	0.7	0.3	1.8	17.0	340	1.4	1.24	18.0	680	-	-	-	-	31	27
7	0.7	0.3	1.8	17.0	380	1.4	1.24	18.0	710	-	-	-	-	27	23
8	0.7	0.3	1.8	18.0	400	1.4	1.24	19.0	800	-	-	-	-	23	20
9	0.7	0.3	1.8	20.0	450	1.4	1.40	20.0	900	-	-	-	-	23	20
10	0.7	0.3	1.8	22.0	500	1.6	1.40	22.0	1000	0.8	1.24	20.0	800	23	20
12	0.7	0.3	1.8	22.5	580	1.6	1.40	22.5	1100	0.8	1.40	21.0	900	20	18
14	0.7	0.3	1.8	23.0	650	1.6	1.40	23.0	1210	0.8	1.40	21.5	1000	20	18
16	0.7	0.3	2.0	24.5	720	1.6	1.40	24.5	1320	0.8	1.40	23.0	1100	18	16
19	0.7	0.3	2.0	25.0	800	1.6	1.40	25.0	1450	0.8	1.40	23.5	1200	18	16
24	0.7	0.3	2.0	28.0	1020	1.6	1.40	28.5	1700	0.8	1.40	27.0	1420	16	14
27	0.7	0.3	2.0	29.0	1100	1.6	1.40	29.0	1850	0.8	1.40	27.5	1550	14	13
30	0.7	0.3	2.0	30.0	1200	1.6	1.40	29.5	1980	0.8	1.40	28.0	1680	14	13
37	0.7	0.3	2.0	32.0	1400	1.6	1.56	32.0	2300	0.8	1.40	30.0	1950	14	13
44	0.7	0.4	2.2	36.0	1700	2.0	1.56	36.0	2900	0.8	1.56	34.0	2300	12	11
52	0.7	0.4	2.2	37.5	1950	2.0	1.56	38.0	3200	0.8	1.56	35.5	2600	12	11
61	0.7	0.4	2.2	39.5	2250	2.0	1.56	40.0	3600	0.8	1.56	37.5	2900	12	11

Construction :

1. Solid / Stranded Annealed Copper Conductor & Tinned / Bare
2. XLPE Insulation
3. Cores laid up (filled in needed)
4. FRLSH / General Purpose PVC Inner Sheath
5. FRLSH / General Purpose PVC Outer Sheath

Max. D.C. Resistance at 20°C - Conductor Size :

1.5 Sq.mm - 12.1 Ω / Km (Bare), 12.2 Ω / Km (Tinned)
2.5 Sq.mm - 7.41 Ω / Km (Bare), 7.56 Ω / Km (Tinned)
Max. A.C. Resistance at 90°C - Conductor Size :
1.5 Sq.mm - 15.49 Ω / Km (Bare), 15.62 Ω / Km (Tinned)
2.5 Sq.mm - 9.48 Ω / Km (Bare), 9.68 Ω / Km (Tinned)
*DIMENSION Specified are with standard conductor

Note : Figure quoted in this table are approximate for general information and are reference purpose only.

FLAME RETARDANT LOW SMOKE CABLES

Conventional power cables, control cables and house wiring cables, jacketed with PVC, although adequate for normal working conditions, prove hazardous in a high temperature environment, when exposed to fire from an external source.

In installations such as power plants, steel plants, fertilizer and petrochemical plants, industries, high rise buildings, cinema theatres, hotels and hospitals, cables are grouped closely together in limited space and installed in ducts or racks. Fire from an external source spreads rapidly in such conditions causing enormous damage.

In addition to danger of fire spreading rapidly, the dense black smoke generated lowers visibility, hindering fire fighting and rescue operations.

Acidic fumes released by the fire are corrosive, causing great damage to sensitive electrical and electronic equipment.

INSUCON now introduces its range of Flame Retardant Low Smoke jacketed cables to counteract these hazards of conventional PVC cables.

INSUCON has been a leading manufacturer of wires and cables and enjoys an enviable reputation for the quality and reliability of its products.

The FRLSH compound has these special properties:

- High resistance to ignition.
- High resistance to flame propagation.
- Low smoke emission.
- Low emission of acid fume.
- High critical oxygen index much greater than general purpose PVC.
- High temperature index 250°C as against 120°C for general purpose PVC.

As a result, in the event of fire from an external source, FRLSH cables arrest the spread of the flames, emit little smoke thus not impairing visibility and corrosive acid generation is minimized.

TEST

The tests detailed below prove the superiority of INSUCON FRLSH cables over general purpose PVC cable under conditions of fire. The tests are as per international specifications.

Test	Specification	Findings Function	General Purpose PVC	FRLS
Critical Oxygen Index	ASTM-D2863	To determine percentage of oxygen required to support combusting at room temperature.	Oxygen required 23%	Oxygen required >29%
Temperature Index	ASTM-D2863	To determine at what temperature normal oxygen content of 21% in air will support combustion.	Maximum Temperature 120°C	Temperature >250%
Smoke Generation	ASTM-D2843 / 77	To determine percentage of density of smoke generated by the PVC jacket over the cable under fire.	Smoke density 80%	Smoke density <60%
Acid gas generation	IEC 754-1	To determine percentage of hydrochloric acid released from the PVC jacket over the cable	Hydrochloric acid released >26%	Hydrochloric acid released <20%
Flammability test on finished cable	IEEE 383	To determine the extent of flame propagation in 20minutes under specific flaming conditions, for a cable sample of 1.8 meters length.	Flame spreads over entire 1.8 meter length	Flame spreads for a maximum of 0.6 meters
Flammability test class FII	Swedish SS 4241475	To determine ignition resistance and flame propagation under specified conditions for a cable sample of 850 mm length	Complete burning of 850 mm length	Unburnt portion more than 300 mm

INSUCON

AERIAL BUNCHED CABLES

for Overhead Power Distribution

INSUCON Aerial Bunched Cables (ABC) are a very novel concept for Overhead Power Distribution. When compared to the conventional bare conductor overhead distribution system, ABC provides higher safety and reliability, lower power losses and ultimate system economy by reducing installation, maintenance and operative cost. This system is ideal for rural distribution and specially attractive for installation in difficult terrains such as hilly areas, forest areas, coastal areas etc. These cables are being designed, manufactured & tested conforming to IS: 14255 & other international specifications.

ABC is also considered to be the choice for power distribution in congested urban areas with narrow lanes and by-lanes. In developing urban complex, ABC is the better choice because of flexibility for re-routing as demanded by changes in urban development plan.

APPLICATION

ABC can be conveniently used :

- As replacement of bare lines in Rural areas, in woods and in other localities & narrow streets where the space is limited.
- As replacement of bare lines where reliability of supply is of prime importance.
- As replacement of bare lines where high degree of stability of supply voltage is of importance.
- In hilly terrains where cost of erection of overhead lines or under ground cable becomes very high.
- As reinforcement of existing system without increasing voltage.
- For temporary supplies.

ADVANTAGES

In comparison to bare overhead distribution lines, ABC has very high reliability in maintaining services because power and neutral conductor are insulated with the best dielectric, resulting in the following advantages..

- Less fault rate on account of good protection against line and ground fault by high winds or falling trees or birds specially in hilly areas & forests are encountered in rural distribution networks.
- High insulation resistance to earth in all seasons and polluted atmospheres. Negligible currents and low losses.
- Multiple circuits of Power and Telephone Cables could be strung in the same set of poles or any other supports like walls etc.
- Better adaptability to run concurrently with existing overhead bare conductor system without any interference.
- High capacitance and low inductance leading to low impedance of lines.
- Lower voltage drop, higher current carrying capacities, vis-a-vis better voltage regulation.
- Longer spans and longer distance lines are possible with better system stability.
- ABC cables are much safer than bare conductors.
- It can be over hung in dense vegetation and forests.
- Additional connections can be easily and quickly made with hot line connectors.
- Total line costs are reduced.
- Maintenance is very easy.
- Very difficult to tap the AB cables, thus reducing theft which leads to lower distribution losses.

TABLE - 45

LT AERIAL BUNCHED CABLES AS PER IS: 14255-1995 SIZE AND REQUIREMENTS OF PHASE, STREET LIGHTING AND MESSENGER CONDUCTOR

Phase Conductor (Aluminium)			Street Lighting Conductor (Aluminium)			Messenger Conductor (Aluminium Alloy)		
Nom. cross sectional area	Max. D.C. Resistance Temp. 20°C	Nom. Thickness of Insulation XLPE/PE	Nom. cross sectional area	Max. D.C. Resistance Temp. 20°C	Nom. Thickness of Insulation XLPE/PE	Nom. cross sectional area	Max. D.C. Resistance Temp. 20°C	Minimum Breaking Load
mm^2	Ω/Km	(mm)	mm^2	Ω/Km	(mm)	mm^2	Ω/Km	KN
16	1.91	1.2	16	1.91	1.2	25	1.38	7
25	1.20	1.2	16	1.91	1.2	25	1.38	7
35	0.868	1.2	16	1.91	1.2	25	1.38	7
50	0.641	1.5	16	1.91	1.2	35	0.986	9.8
70	0.443	1.5	16	1.91	1.2	50	0.689	14
95	0.320	1.5	16	1.91	1.2	70	0.492	19.7

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

INSUCON

THERMOCOUPLE WIRE AND CABLE

TEMPERATURE MEASUREMENT AND CONTROL

The measurement of temperature is one of the most vital functions in the control of manufacturing and processing operations. As demands for greater quality, reliability and economy increase, the demands for more precise measurement and control increase. Newer and more sophisticated electronic circuitry is employed creating stringent demands on the wire and cable used to sense and transmit temperature measurements. To meet these ever-increasing demands Insucon has a full line of Thermocouple Grade Wire and Thermocouple extension wire and Cable. Complementing its line of Electronic Instrumentation Cable Insucon now provides the industry with a complete line of wire and cable for manufacturing and process control, all produced to the highest standards of reliability and safety established by government and industry.

THE THERMOCOUPLE

At the heart of all temperature measurements is the thermocouple. Although involving very complex design parameters, the fundamental concept of all thermocouples is the same. Two wires of dissimilar metal are joined together at one end. An increase in temperature creates an electromotive force (emf) or signal, which is transmitted through these wires to a monitoring device which "reads" this signal and displays it on a previously calibrated meter of digital device.

The monitoring device is usually at a location some distance away from the actual thermocouple. To connect the thermocouple to the monitor requires wire or cable (for multiple thermocouple installations) that will maintain the integrity of the temperature-emf signal generated by the primary wires in the thermocouple.

CONDUCTOR MATERIALS

The range and accuracy of temperature measurement are dependent on the conductor materials employed. Pairs of various metal alloys will react differently with changes in temperature.

Chart No. 1 gives the temperature range and limits of error (tolerance) for the most popular alloy combinations. All Insucon thermocouple wire and cable is tested and calibrated to the standard limits of error as indicated. Where situations require closer tolerances, wire and cable calibrated to the special error limits is available under special order.

LIMITS OF ERROR FOR THERMOCOUPLE GRADE AND EXTENSION WIRE
Chart No. 1

THERMOCOUPLE GRADE				
ANSI Type	Material	Temp. Range °C	Standard Limits (+ -)	Special Limits (+ -)
J	Iron/Constantan	0 to 277	2.22 °C	1.11 °C
		277 to 760	3/4 %	3/8 %
K	Chromel/Alumel	0 to 277	2.22 °C	1.11 °C
		277 to 1260	3 /4 %	3/8 %
T	Copper/ Constantan	-184 to 101	-	1 %
		-101 to -59	2 %	1 %
		-59 to +93	0.83 °C	0.42 °C
		93 to 371	3 /4 %	3/8 %
E	Chromel/ Constantan	0 to 316	1.67 °C	1.25 % °C
		316 to 871	1 /2 %	3/8 %

THERMOCOUPLE EXTENSION				
ANSI Type	Material	Temp. Range °C	Standard Limits (+ -)	Special Limits (+ -)
JX	Iron/Constantan	-18 to 204	2.22 °C	1.11 °C
KX	Chromel/Alumel	-18 to 204	2.22 °C	1.11 °C
TX	Copper/Constantan	-59 to 93	0.83 °C	0.42 °C
EX	Chromel/Constantan	-18 to 204	2.22 °C	1.11 °C

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

INSULATION AND JACKETS

INSUCON'S Standard line of thermocouple wire and cable is available in a wide range of insulating and jacketing materials to suit the most demanding environmental conditions.

Chart No. 2 gives the most popular combinations of material and the characteristics of each. Special situations may require other types of materials. INSUCON'S technical service team is available to help in determining the exact choice for your application.

GENERAL CHARACTERISTICS OF THERMOCOUPLE WIRE INSULATIONS Chart No. 2

Insulation	Jacket	Temperature °C (°F)		Mechanical Properties Abrasion			Chemical Properties (Resistance to)			
		Cont.	Inter.	Flame	Res.	Flexibility	Solvents	Acids	Bases	Moisture
PVC	PVC	105 (221)	-	G	G	G	F	G	G	G
Glass Braid with Silicone	Glass Braid with Silicone	482 (900)	538 (1000)	E	F/G	G	E	E	E	F/G to 204°C
Teflon (TFE-TAPE)	Teflon (TFE-TAPE)	260 (500)	-	E	E	E	E	E	E	E
High Temp. Glass Braid with Silicone	High Temp. Glass Braid with Silicone	649 (1200)	-	E	F/G	G	E	E	E	F/G to 204°C

E = Excellent, G = Good, F = Fair, P = Poor

ANSI / ISA COMPLIANCE

The key to precise temperature measurement is consistency. Establishing very exacting standards of calibration, ANSI, the American National Standards Institute and ISA, Instrument Society of America have been able to govern the specification and manufacture of thermocouple and extension wire and cable. These standards establish quality control techniques and require certification by the manufacturer to ensure performance.

INSUCON provides the entire product line with full compliance to these standards. ANSI colour coding is used throughout enabling positive identification and installation in complete conformance to governing specifications.

ISA / ANSI COLOUR CODE

Type		Positive Wires		Negative Wires		Overall Jacket		
Grade	Extension					Grade	Tracer	Extension
J	JX	Iron	White	Constantan	Red	Brown	Black	Black
K	KX	Chromel	Yellow	Alumel	Red	Brown	Yellow	Yellow
T	TX	Copper	Blue	Constantan	Red	Brown	Blue	Blue
E	EX	Chromel	Purple	Constantan	Red	Brown	Purple	Purple

THERMOCOUPLE WIRE DIAMETER & RESISTANCE

(Ohms per 100 Double Feet @ 20°C)

AWG	Diameter, Inches (Single Conductor)	Type J Iron / Constantan	Type K Chromel / Alumel	Type T Copper / Constantan	Type E Chromel / Constantan	Type S and R Copper / Alloy #11
14	0.0641	008.92	014.72	007.43	017.58	00.93
16	0.0508	014.06	023.23	011.70	027.70	01.48
18	0.0403	022.86	037.70	019.05	045.00	02.39
20	0.0320	035.69	058.80	029.72	070.20	03.76
22	0.0253	056.71	093.90	047.21	111.90	05.97
24	0.0201	090.47	148.80	075.37	177.80	09.50
28	0.0126	229.70	379.00	191.49	453.00	24.01
30	0.0100	365.00	602.00	304.32	719.00	38.18

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

QUALITY CONTROL

In the manufacture of cables, intelligent efforts and standard laid down operating procedures at each and every stage are followed to achieve quality. For quality end products, control starts from proper design of the product. All raw material are selected carefully and only materials of high quality are used in production. Having done this, stagewise inspection is done to ensure conformity with the requirements of relevant Indian/International Standards where these apply.

Stage Wise Inspection

i) Wire Drawing	:	Wire diameter Surface Shape Quality of joints in the wire
ii) Stranding of Wires	:	Quality of joints in the wire Compaction of conductor Shape of Conductor Dimensions Resistance of Conductor Direction of Lay
iii) Insulation	:	Dimension over Insulation Thickness of Insulation Surface defects
iv) Curing	:	Hot set test, Tensile strength & elongation (for XLPE Insulation)
v) Laying Up	:	Sequence of Cores Direction of lay Diameter over laid up cores Circularity
vi) Inner Sheath	:	Thickness of Sheath Diameter over Sheath Surface Uniformity Circularity Porosity
vii) Armouring	:	Diameter of Wires/ Dimensions of Strips Direction of lay Coverage Quality of Joints of Wires
viii) Outer Sheath	:	Thickness of Sheath Diameter over Sheath Tightness of Sheath Ovality, Eccentricity, Porosity, Embossing

TESTS

The tests on cables have been classified broadly in four categories as follows:

Routine Tests:

Tests carried out on each Cable to check the requirements which are likely to vary during production.

Type Tests:

Tests carried out to prove conformity with the specification. These are intended to prove the general qualities and design of a given type of cable.

Acceptance Tests:

.Tests carried out on samples taken from a lot for the purpose of acceptance of the lot.

Optional Tests:

Special tests to be carried out when required by agreement between the purchaser and the manufacturer.

Special tests required for FRLS Cables can also be carried out at our works i.e Halogen gas generation test to IEC-754 (Part-1), Smoke generation test to ASTMD-2843, Oxygen index test and Temperature index test to ASTMD-2863, Flammability test to (1) IEC-332-3, Flame resistance test to IEEE-383.

LIST OF TESTS AS PER IS:1554 (P-I) AND IS:7098 (P-I)

1. Routine Tests:

   a) Conductor Resistance Test
   b) High Voltage Test

2. Type Tests:

   a) Tensile Test (for Aluminium Conductor)
   b) Wrapping Test (for Aluminium Conductor)
   c) Annealing Test (for Copper Conductor)
   d) Conductor Resistance Test
   e) Test for Armour Wire / Strips
   f) Test for thickness of Insulation & Sheath
   g) Physical Test for Insulation & Outer Sheath
   h) Insulation Resistance Test
   i) High Voltage Test
   j) Flammability Test
   k) Hot Set Test (for XLPE Insulation only)
   l) Water Absorption Test (for XLPE cables)

3. Acceptance Tests:

   a) Tensile Test (for Aluminium Conductor)
   b) Wrapping Test (for Aluminium Conductor)
   c) Annealing Test (for Copper Conductor)
   d) Conductor Resistance Test
   e) Test for thickness of Insulation & Sheath
   f) High Voltages Test
   g) Insulation Resistance Test
   h) Tensile Strength & Elongation at break test for Insulation & Sheath
   i) Hot Set Test (for XLPE Insulation only)

4. Optional Tests :

   a) Cold Bend Test
   b) Cold Impact Test

5. Special Tests (as applicable) :

   a) Oxygen Index Test as per ASTMD 2863 77
   b) Temp. Index Test as per ASTMD 2863 77
   c) Smoke Generation Test as per ASTMD 2843 77
   d) Acid Gas Generation Test as per IEC 754 1
   e) Flammability Test as per IEC 332 1, IEEE 383, SS 4241475 Class F3 and IE 332 1
   f) Accelerated water absorption test (by Electrical Method)
   g) Test for Anti-rodent & Anti-termite property
   h) Colour fastness to water & air

INFORMATION REQUIRED WITH ENQUIRY & ORDER

The following information should be included in an enquiry:

i) Voltage grade.

ii) Type of installation whether in air or in ducts or in ground.

iii) If cables are grouped together, then number of cables in group and vertical and horizontal spacing between them.

iv) Required value and duration of short circuit current.

Following further information are also required for offering the exact type of cable for any specific purpose:

a) The normal ambient or operating temperature.

b) The maximum temperature to which the PVC will be exposed and the duration and frequency of such exposures.

c) The material with which the PVC will be in contact i.e. oil, gases, acids, alkalies etc. at normal and maximum temperature.

d) If special flame retardant property is required.

e) If any special electrical characteristics is needed.

SELECTION GUIDE

For selection of a cable, a first hand knowledge of the system in which the cable is to be used, and the installation conditions under which the cable has to operate, is necessary. A knowledge of statutory restrictions and the manufacturing facilities available in the country will help in finding out as to what type of cable will be available for particular usage. The environmental conditions under which the cable has to operate will decide its protective covering. Thus once voltage grade of the cable, number of cores, conductor material, type of insulation and protective coverings are known, size of conductor remains to be decided. The first and foremost criterion for the size of conductor is continuous current rating for the present load. Thereafter the same should be checked for short circuit, voltage drop, over load capacities and future expansions. Once decided the selection of the next higher size compared to what is essential for the requirement, will always be worthwhile.
Economic considerations are also necessary.

INSUCON

SHORT CIRCUIT RATINGS

The conductor size in a Cable for an installation is also governed by its ability to carry short circuit current of the system. Short circuit ratings are based on the assumption that the duration of short circuit is so small and apparently there is no transmission of heat, produced during short circuit through the insulation and the whole of it is absorbed by the conductor.

The short circuit current rating (r.m.s. values) of XLPE / PVC insulated cables with aluminium and copper conductor for one second duration are given as under. These ratings have been calculated on the following assumptions.

		UNIT	ALUMINIUM	COPPER
1)	Temperature of conductor just prior to short circuit.			
	a) With general purpose insulation	^{0}C	70	70
	b) With heat resisting insulation	^{0}C	85	85
	c) With XLPE insulation	^{0}C	90	90
2)	Max. permissible temperature of conductor during short circuit			
	a) With PVC insulation	^{0}C	160	160
	b) With XLPE insulation	^{0}C	250	250
3)	Volumetric specific heat of conductor at 20^{0}C	J/^{0}Cmm^3	2.5×10^3	3.45×10^3
4)	Resistivity of conductor at 20^{0}C	ohm-mm	28.264×10^6	17.241×10^6
5)	Reciprocal of temperature co-efficient of resistence of conductor at 0^{0}C	^{0}C	228	234.5

With the above assumptions the short circuit rating "I_{sh}" is given by the following formula.

$$I_{sh} = \frac{KA}{\sqrt{t}} \text{ Kilo Amps}$$

Where

K = Constant (depends upon the type of insulation and conductor material)

A = Nominal cross-sectional area of conductor in mm^2

t = Duration of short circuit in seconds

K = 0.076 for GP PVC Insulated Cables with Aluminium Conductor
0.115 for GP PVC Insulated Cables with Copper Conductor
0.069 for HR PVC Insulated Cables with Aluminium Conductor
0.104 for HR PVC Insulated Cables with Copper Conductor
0.094 for XLPE Insulated Cables with Aluminium Conductor
0.143 for XLPE Insulated Cables with Copper Conductor

TABLE - 46

SHORT CIRCUIT RATING OF 1100 VOLTS GRADE PVC INSULATED HEAVY DUTY CABLES (FOR DURATION OF ONE SECOND)

Nominal Area of Conductor	Aluminium Conductor		Copper Conductor	
	With General purpose Insulation	With Heat Resisting Insulation	With General purpose Insulation	With Heat Resisting Insulation
Sq. mm	K. Amp	K. Amp	K. Amp	K. Amp
1.5	0.114	0.103	0.173	0.156
2.5	0.190	0.172	0.288	0.260
4.0	0.304	0.274	0.460	0.416
6.0	0.456	0.412	0.690	0.624
10	0.760	0.686	1.150	1.040
16	1.220	1.100	1.840	1.660
25	1.900	1.720	2.880	2.600
35	2.660	2.400	4.030	3.640
50	3.800	3.430	5.750	5.200
70	5.320	4.800	8.050	7.280
95	7.220	6.520	10.900	9.880
120	9.120	8.230	13.800	12.500
150	11.400	10.300	17.300	15.600
185	14.100	12.700	21.300	19.200
240	18.200	16.500	27.300	25.000
300	22.800	20.600	34.500	31.200
400	30.400	27.400	46.000	41.600
500	38.000	34.300	57.500	52.000
630	47.900	43.200	72.500	65.500
800	60.800	54.900	92.000	83.200
1000	76.000	68.600	115.000	104.000

TABLE - 47

SHORT CIRCUIT RATING FOR XLPE INSULATED CABLES (FOR DURATION OF ONE SECOND)

Nominal Area of Conductor	With Aluminium Conductor	With Copper Conductor
Sq. mm	K. Amp	K. Amp
1.5	0.141	0.215
2.5	0.235	0.358
4.0	0.376	0.572
6.0	0.564	0.858
10	0.940	1.430
16	1.504	2.290
25	2.350	3.580
35	3.290	5.000
50	4.700	7.150
70	6.580	10.000
95	8.930	13.590
120	11.280	17.160
150	14.100	21.450
185	17.390	26.450
240	22.560	34.320
300	28.200	42.900
400	37.600	57.200
500	47.000	71.500
630	59.220	90.100
800	75.200	114.400
1000	94.000	143.000

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

INSUCON

CAPACITANCE OF 1.1 KV GRADE CABLES

TABLE - 48

Nominal Cross Sectional Area of Conductor	PVC Cable			XLPE Cable		
	Single Core Cable		Twin & Multicore Cable	Single Core Cable		Twin & Multicore Cable
	Un-Armoured	Armoured		Un-Armoured	Armoured	
Sq.mm	M Farads / Km	M Farads / Km	M Farads / Km	M Farads / Km	M Farads / Km	M Farads / Km
1.5	-	-	0.20	0.19	-	0.15
2.5	-	-	0.22	0.24	-	0.18
4	0.80	0.50	0.24	0.29	-	0.22
6	0.68	0.55	0.26	0.34	-	0.25
10	0.82	0.66	0.32	0.43	0.32	0.31
16	1.00	0.80	0.41	0.51	0.38	0.36
25	1.06	0.88	0.41	0.49	0.38	0.41
35	1.20	1.00	0.46	0.57	0.44	0.47
50	1.22	1.02	0.48	0.58	0.46	0.50
70	1.44	1.20	0.56	0.63	0.51	0.53
95	1.48	1.26	0.57	0.73	0.59	0.61
120	1.60	1.42	0.62	0.74	0.61	0.63
150	1.60	1.42	0.63	0.73	0.61	0.64
185	1.61	1.43	0.63	0.69	0.59	0.65
240	1.70	1.52	0.66	0.74	0.64	0.66
300	1.72	1.55	0.68	0.80	0.69	0.67
400	1.80	1.60	0.71	0.83	0.70	0.67
500	-	-	-	0.83	0.71	0.69
630	-	-	-	0.87	0.75	0.73
800	-	-	-	0.92	0.78	-
1000	-	-	-	0.94	0.81	-

REACTANCE OF 1.1 KV GRADE CABLES

TABLE - 49

Nominal Cross Sectional Area of Conductor	PVC Cable			XLPE Cable		
	Single Core Cable		Twin & Multicore Cable	Single Core Cable		Twin & Multicore Cable
	Un-Armoured	Armoured		Un-Armoured	Armoured	
Sq.mm	M Farads / Km	M Farads / Km	M Farads / Km	M Farads / Km	M Farads / Km	M Farads / Km
1.5	-	-	0.112	0.155	-	0.107
2.5	-	-	0.107	0.142	-	0.0985
4	0.132	0.153	0.098	0.132	-	0.0927
6	0.127	0.148	0.096	0.123	-	0.0884
10	0.118	0.138	0.091	0.114	0.134	0.0837
16	0.110	0.128	0.085	0.108	0.125	0.0808
25	0.105	0.120	0.083	0.103	0.120	0.0805
35	0.100	0.114	0.082	0.0986	0.114	0.0783
50	0.098	0.110	0.082	0.0937	0.108	0.0850
70	0.091	0.103	0.076	0.0900	0.102	0.0740
95	0.088	0.101	0.076	0.0865	0.100	0.0724
120	0.086	0.096	0.075	0.0841	0.0968	0.0712
150	0.085	0.094	0.074	0.0839	0.0941	0.0716
185	0.084	0.092	0.074	0.0836	0.0932	0.0718
240	0.082	0.090	0.073	0.0813	0.0900	0.0710
300	0.080	0.088	0.073	0.0795	0.0881	0.0705
400	0.080	0.088	0.072	0.0787	0.0873	0.0704
500	0.079	0.087	-	0.0779	0.0859	0.0702
630	0.077	0.086	-	0.0785	0.0843	0.0698
800	0.077	0.083	-	0.0755	0.0826	-
1000	0.076	0.082	-	0.0752	0.0825	-

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

IMPEDANCE (Plain Copper Conductor) APPROXIMATE IMPEDANCE (ohms/km)

TABLE - 50

Conductor Cross Sectional Area	XLPE			PVC		
	Single Core @ 90 deg. C		Multicore @ 90 deg. C	Single Core @ 70 deg. C		Multicore @ 70 deg. C
sq. mm	Un-armoured	Armoured		Un-armoured	Armoured	
1.50	15.5005	–	15.5004	14.5005	–	14.5004
2.50	9.4807	–	9.4805	8.9008	–	8.9007
4	5.9010	–	5.9008	5.5212	–	5.5210
6	3.9413	–	3.9410	3.6917	–	3.6913
10	2.3421	–	2.3416	2.1925	–	2.1919
16	1.4730	1.4735	1.4723	1.3836	1.3840	1.3827
25	0.9348	0.9353	0.9336	0.8756	0.8762	0.8743
35	0.6773	0.6780	0.6757	0.6373	0.6379	0.6355
50	0.5035	0.5041	0.5013	0.4739	0.4746	0.4715
70	0.3542	0.3549	0.3511	0.3336	0.3344	0.3303
95	0.2617	0.2625	0.2577	0.2490	0.2499	0.2446
120	0.2139	0.2148	0.2090	0.2042	0.2051	0.1989
150	0.1809	0.1820	0.1750	0.1744	0.1755	0.1681
185	0.1533	0.1542	0.1463	0.1497	0.1507	0.1424
240	0.1286	0.1297	0.1204	0.1287	0.1288	0.1192
300	0.1141	0.1151	0.1048	0.1149	0.1159	0.1054
400	0.1031	0.1045	0.0927	0.1055	0.1067	0.0947
500	0.0957	0.0971	0.0845	0.0992	0.1006	0.0881
630	0.0904	0.0917	0.0785	0.0948	0.0963	0.0831
800	0.0873	0.0888	–	0.0913	0.0927	–
1000	0.0853	0.0866	–	0.0889	0.0901	–

IMPEDANCE (Aluminium Conductor) APPROXIMATE IMPEDANCE (ohms/km)

TABLE - 51

Conductor Cross Sectional Area	XLPE			PVC		
	Single Core @ 90 deg. C		Multicore @ 90 deg. C	Single Core @ 70 deg. C		Multicore @ 70 deg. C
sq. mm	Un-armoured	Armoured		Un-armoured	Armoured	
1.50	23.1703	–	23.1702	21.7004	–	21.7003
2.50	15.5004	–	15.5003	14.5005	–	14.5004
4	9.4806	–	9.4805	8.9008	–	8.9006
6	5.9009	–	5.9007	5.5411	–	5.5409
10	3.9412	–	3.9409	3.7015	–	3.7011
16	2.4418	2.4421	2.4414	2.3022	2.3024	2.3016
25	1.5429	1.5432	1.5422	1.4434	1.4437	1.4426
35	1.1138	1.1142	1.1128	1.0444	1.0448	1.0433
50	0.8252	0.8255	0.8238	0.7760	0.7764	0.7745
70	0.5738	0.5743	0.5720	0.5407	0.5412	0.5387
95	0.4190	0.4195	0.4165	0.3955	0.3960	0.3927
120	0.3351	0.3357	0.3320	0.3176	0.3182	0.3142
150	0.2777	0.2785	0.2740	0.2644	0.2651	0.2603
185	0.2269	0.2275	0.2222	0.2167	0.2174	0.2117
240	0.1812	0.1819	0.1754	0.1754	0.1762	0.1693
300	0.1532	0.1540	0.1464	0.1498	0.1507	0.1427
400	0.1304	0.1315	0.1224	0.1293	0.1303	0.1207
500	0.1138	0.1150	0.1046	0.1151	0.1163	0.1056
630	0.1023	0.1034	0.0920	0.1051	0.1065	0.0947
800	0.0950	0.0964	–	0.0982	0.0995	–
1000	0.0903	0.0915	–	0.0936	0.0947	–

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

CURRENT RATING (PVC / XLPE)

Basic assumption and conditions of installation

Max. Temperature of Conductor at continuous operation	70°C / 85°C / 90°C
Ambient Air Temperature	40°C
Ground Temperature	30°C
Thermal Resistivity of Soil	150°C Cm / W
Depth of Laying	750 mm
Max. Temperature of Conductor for Short Circuit	160°C / 250°C

RATING FACTORS

i) Rating Factors related to variation in Ambient Air Temperature

Air Temperature in Deg.		20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C
	Normal PVC	1.32	1.22	1.15	1.08	1.00	0.91	0.82	0.71
	HR PVC	1.22	1.15	1.11	1.05	1.00	0.94	0.88	0.82
Rating Factors	XLPE	1.20	1.14	1.10	1.05	1.00	0.95	0.89	0.81

ii) Rating Factors related to variation in Ground / Duct Temperature

Air Temperature in Deg.		15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C
	Normal PVC	1.17	1.12	1.06	1.00	0.94	0.87	0.79	0.71
	HR PVC	1.13	1.09	1.04	1.00	0.95	0.90	0.85	0.80
Rating Factors	XLPE	1.12	1.08	1.04	1.00	0.96	0.91	0.87	0.82

iii) Rating Factors related to variation in Ground Thermal Resistivity of Soil for 3 single core cables laid direct in ground. (Average Value)

Thermal Resistivity in °C. Cm/W	100	120	150	200	250	300
Rating Factors	1.20	1.10	1.00	0.90	0.81	0.74

iv) Rating Factors related to variation in Ground Thermal Resistivity of Soil for multi core cables laid direct in ground. (Average Value)

Thermal Resistivity in °C. Cm/W	100	120	150	200	250	300
Rating Factors	1.16	1.08	1.00	0.90	0.82	0.76

RATING FACTORS FOR CABLES LAID DIRECTLY IN GROUND IN HORIZONTAL FORMATION

No. of Cables	Distance of Cables			
	Touching	15 cm	30 cm	45 cm
2	0.79	0.82	0.87	0.90
3	0.69	0.75	0.79	0.83
4	0.62	0.69	0.74	0.79
5	0.58	0.65	0.72	0.76
6	0.54	0.61	0.69	0.75

RATING FACTORS FOR VARIATION IN DEPTH OF LAYING IN GROUND

Depth of Laying	SIZES		
	Upto 25 mm^2	25 to 300 mm^2	Above 300 mm^2
75 cm	1.00	1.00	1.00
90 cm	0.99	0.98	0.97
105 cm	0.98	0.97	0.96
120 cm	0.97	0.96	0.95
150 cm	0.96	0.94	0.92
180 cm >	0.95	0.93	0.91

Note : Figure quoted in these tables are approximate for general information and are reference purpose only

FORMULA FOR CALCULATING VOLTAGE DROP IN A BALANCED 3 PHASE AC DISTRIBUTION SYSTEM 50 HZ

Voltage drop (rms) per KM pr Phase (Volts)

$= 3 \times K_T \times K_{AC}$ × (Max. continous current rating (Amps)
× (D.C. Resistance per phase per KM (Ohms/km)

Where

$K_T = 1 + a\ (Tc - To)$; a = 0.00393 for Copper
a = 0.004 for Aluminium
Tc = Max. conductor temperature (^{0}C)
To = 20^{0}C standard temperature.

and K_{AC} = factor for converting DC resistance to AC resistance.

APPROXIMATE VALUES OF K_{AC} FOR 1100 V CABLES ARE GIVEN BELOW :

Nominal Conductor Area (mm^2)	Copper Conductor	Aluminium Conductor
1.5 to 95	1.000	1.000
120	1.010	1.003
150	1.015	1.005
185	1.022	1.008
240	1.038	1.014
300	1.062	1.020
400	1.100	1.038
500	1.150	1.060

VOLTAGE DROP (Plain Copper Conductor) APPROXIMATE VOLTAGE DROP (mV / A / m)

Conductor Cross Sectional Area	XLPE			PVC		
	Single Phase @ 90 deg. C		3 Phase @ 90 deg. C	Single Phase @ 70 deg. C		3 Phase @ 70 deg. C
sq. mm	Un-armoured	Armoured		Un-armoured	Armoured	
1.50	31.0009	–	26.8156	29.0011	–	25.0857
2.50	18.9614	–	16.4013	17.8016	–	15.3981
4	11.8020	–	10.2083	11.0424	–	9.5513
6	7.8827	–	6.8180	7.3833	–	6.3860
10	4.6841	–	4.0509	4.3850	–	3.7920
16	2.9461	2.9469	2.5470	2.7672	2.7681	2.3922
25	1.8696	1.8706	1.6151	1.7512	1.7523	1.5125
35	1.3546	1.3559	1.1689	1.2746	1.2759	1.0994
50	1.0070	1.0083	0.8673	0.9479	0.9492	0.8157
70	0.7083	0.7097	0.6075	0.6673	0.6688	0.5715
95	0.5234	0.5250	0.4458	0.4981	0.4997	0.4232
120	0.4279	0.4296	0.3616	0.4084	0.4102	0.3441
150	0.3618	0.3640	0.3028	0.3487	0.3510	0.2908
185	0.3065	0.3085	0.2532	0.2994	0.3014	0.2463
240	0.2573	0.2593	0.2082	0.2555	0.2576	0.2061
300	0.2282	0.2302	0.1812	0.2297	0.2319	0.1823
400	0.2061	0.2091	0.1604	0.2110	0.2135	0.1639
500	0.1914	0.1942	0.1461	0.1985	0.2013	0.1524
630	0.1808	0.1834	0.1359	0.1896	0.1927	0.1438
800	0.1746	0.1775	–	0.1826	0.1854	–
1000	0.1706	0.1732	–	0.1778	0.1803	–

VOLTAGE DROP (Aluminium Conductor) APPROXIMATE VOLTAGE DROP (mV / A / m)

Conductor Cross Sectional Area	XLPE			PVC		
	Single Phase @ 90 deg. C		3 Phase @ 90 deg. C	Single Phase @ 70 deg. C		3 Phase @ 70 deg. C
sq. mm	Un-armoured	Armoured		Un-armoured	Armoured	
1.50	46.3406	–	40.0845	43.4007	–	37.5415
2.50	31.0008	–	26.8156	29.0010	–	25.0857
4	18.9612	–	16.4012	17.8015	–	15.3980
6	11.8018	–	10.2082	11.0822	–	9.5857
10	7.8824	–	6.8178	7.4030	–	6.4030
16	4.8837	4.8842	4.2236	4.6043	4.6049	3.9819
25	3.0858	3.0864	2.6679	2.8868	2.8875	2.4956
35	2.2277	2.2284	1.9252	2.0889	2.0897	1.8050
50	1.6503	1.6511	1.4252	1.5521	1.5529	1.3399
70	1.1476	1.1485	0.9895	1.0814	1.0823	0.9319
95	0.8380	0.8391	0.7206	0.7910	0.7921	0.6794
120	0.6703	0.6714	0.5744	0.6352	0.6363	0.5436
150	0.5555	0.5569	0.4740	0.5288	0.5303	0.4503
185	0.4537	0.4550	0.3845	0.4334	0.4348	0.3663
240	0.3624	0.3639	0.3035	0.3509	0.3524	0.2928
300	0.3065	0.3080	0.2533	0.2997	0.3013	0.2469
400	0.2608	0.2631	0.2117	0.2586	0.2606	0.2088
500	0.2277	0.2300	0.1809	0.2301	0.2325	0.1827
630	0.2046	0.2069	0.1591	0.2102	0.2130	0.1639
800	0.1901	0.1928	–	0.1964	0.1990	–
1000	0.1805	0.1831	–	0.1871	0.1894	–

Note : Figure quoted in these tables are approximate for general information and are reference purpose only.

RECOMMENDATIONS FOR CABLE PULLING DURING INSTALLATION AND CABLE HANDLING

A. ***Maximum permitted Pulling Force when applied on the cables conductors***

Total cross section area of Cu conductors (mm^2) X 5 = max permitted pulling force (Kg)

Total cross section area of Al conductors (mm^2) X 3 = max permitted pulling force (kg)

B. ***Pulling with cable stocking***

- Armoured Cables : $P = 1,2*D^2$
- Un-armoured Cables : $P = 0,5*D^2$

Where : D = Overall cable Diameter in mm

P = Pulling Force in Kg

C. ***Minimum Bending radius during installation***

- ***for 1KV cables***

Single core-armoured and un-armoured cables } 15*D

Multi core-armoured and un-armoured cables } 12*D

- ***for 450/750V cables***

Single core-armoured and un-armoured cables

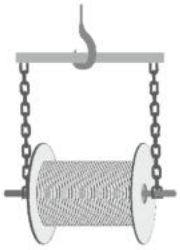
Multi core-armoured and un-armoured cables } 6*D

RECOMMENDATIONS FOR STORAGE AND INSTALLATION OF CABLES

HANDLING AND STORAGE

Handling at site: While unloading the cable drums certain precautions are to be taken for ensuring the safety of the cable.

WRONG



CORRECT

When using a lift or crane use a spreader bar longer than the overall drum width, just above the drum flanges. Without a spreader bar this will lead to bending of drum flanges crushing and damaging the cable.

WRONG

CORRECT

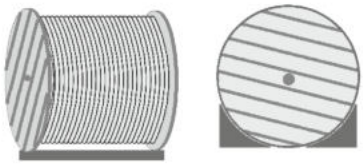
When unloading from the truck, an inclined ramp should be used to lower the drum. Do not drop the drum directly from the truck as it may lead to the damage of the drum and subsequently the cable.

WRONG

CORRECT

While using forklift for handling or shifting the drum, the drum should be perpendicular to the forks, rather than parallel. Do not allow the forks to be in contact with the cable.

WRONG



CORRECT

STORAGE

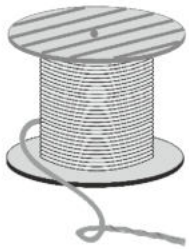
Cable drums should be stored on plain ground without any hard stones projecting above the surface and dry place away from direct sunlight and rain . All cable drums should be stored with the battens intact, with sufficient space in between the drums. Ensure stoppers for every drum to avoid the drum movement after storage. Cable drums should not be stored one above the other.

WRONG

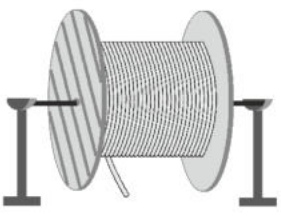
CORRECT

INSTALLATION AND LAYING

While laying of cables special care has to be taken. The cable end should be pulled with pulling eye only after mounting the drum on the jacks. Do not keep the drum on its flange while pulling the cable. This will result in bird caging (twists and deformation of cable) and armour swelling.



WRONG



CORRECT

Minimum Bending Radius:		
Cable Type	Single Core	Multi Core
HT Cable	20xD	15xD
LT Cable	15xD	12xD

TESTING AT SITE

After the cable is installed before commissioning, it should be tested for DC High voltage. The recommended voltage and duration will be as per IS:1255. Megger, continuity and cross continuity to be checked on each core before and after laying.

KEY CLIENTS


EIL
A Navratna Company
एनटीपीसी
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राष्ट्र की सेवा में परमाणु
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INSUCON

INSUCON CABLES AND CONDUCTORS PRIVATE LIMITED

Office Address :
C-374, Vaishali Nagar (Behind Amar Jain Hospital)
Jaipur - 302021 (Raj.)
0141 - 2370184 / 4049438

Works & Registered Address :
F 59 - 63, Road No. 5A, Bindayaka Industrial Area,
Jaipur - 302 041 (Raj.) 0141 - 2240557 / 2240548

marketing@insuconcables.com
info@insuconcables.com
www.**insuconcables.com**

Branches :

Delhi	:	+91 89492 33990
Kolkata	:	+91 82900 73333
Bangalore	:	+91 99006 56565